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VOL 18 ISSUE 10 • OCTOBER • 2015

INDIA'S CIVIL AVIATION POLICY DRAFT

ANALYSES BY AN AVIATION EXPERT, BAOA & ARROW AIRCRAFT

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MILITARY

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CURTAIN RAISER - NBAA 2015

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A formation of Gulfstream G650 and G280. The entire Gulfstream fleet will be on static display at NBAA 2015

Cover image by: Gulfstream

OPPORTUNITIES GALORE: THE EVER-INCREASING POTENTIAL FOR SMALL, UNMANNED AIRCRAFT SYSTEMS (S-UAS) IN BUSINESS AVIATION WILL BE DEMONSTRATED BY AN EXPANDED ROSTER OF S-UAS-FOCUSED EXHIBITS, SEMINARS AND ACTIVITIES THROUGHOUT NBAA'S 2015 BUSINESS AVIATION CONVENTION & EXHIBITION, SET FOR NOVEMBER 17 TO 19 IN LAS VEGAS, NEVADA.

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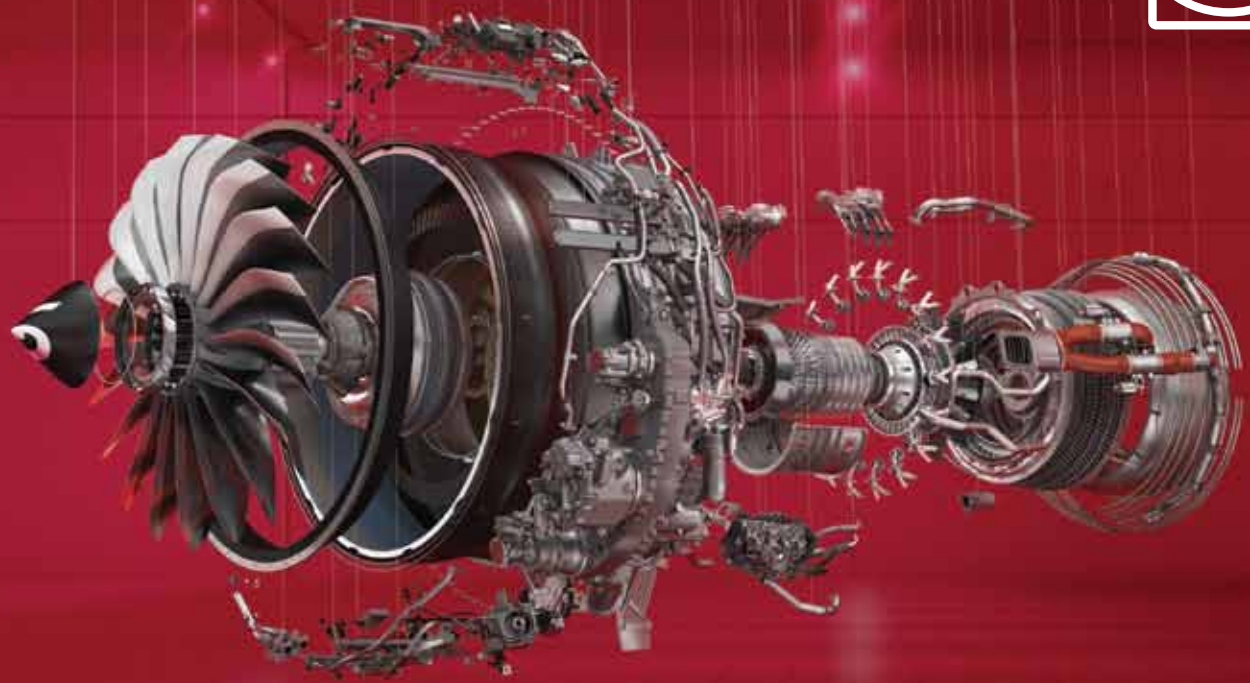

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MORE TO BELIEVE IN

THE HISTORIC VICTORY BY NORTHROP GRUMMAN IN THE RACE FOR THE CONTRACT TO DEVELOP AND MANUFACTURE THE NEXT-GEN LONG-RANGE STEALTH BOMBER FROM THE US AIR FORCE IS MAKING RIPPLES IN AEROSPACE WORLD. SUCH AN EVENT WILL BRING IN THE NEXT LEVELS OF STEALTH CAPABILITY

THE ESSENCE OF THE very role contributed by business and general aviation is summed in the slogan 'No Plane No Gain' propagated by NBAA in the United States. The fact that these subsectors of civil aviation cater not only to the elitist part of society but to the economy of the countries by enabling large corporate houses and start-up companies, aspiring to be the big players in business world, to achieve their business goals and milestones faster.

Keeping up with such level of contribution from this sector, we have included some interesting and informative aspects of business aviation covered in this new issue such as reasons to fly private charters the ownership of the flying machines via various kinds of models. It's important to note that business aircraft therefore are better interpreted as 'Business Tools'. The upcoming NBAA 2015 will also have an innovation section showcasing the opportunities in unmanned aircraft systems (UAS).

Back home, we have attempted to look at the Draft National Civil Aviation Policy. Holistic analysis by aviation expert Air Marshal B.K. Pandey (Retd) gives a set of quick reaction as to what needs to be there to facilitate the real growth of civil aviation sector in India. The two experts from the GA/BA industry have given their perspectives indicating on what all it does miss out even if it promises to be a dynamic one and seemingly a good start. The most crucial issues the sector has been facing for decades by now have not been covered and catered to. Whether import duties' rationalisation or the motherly attention to the domestic operators including the chartered services operators (certain points appear to be friendlier to the international charter service operators, though) – the draft does not adequately touch upon these aspects at all.

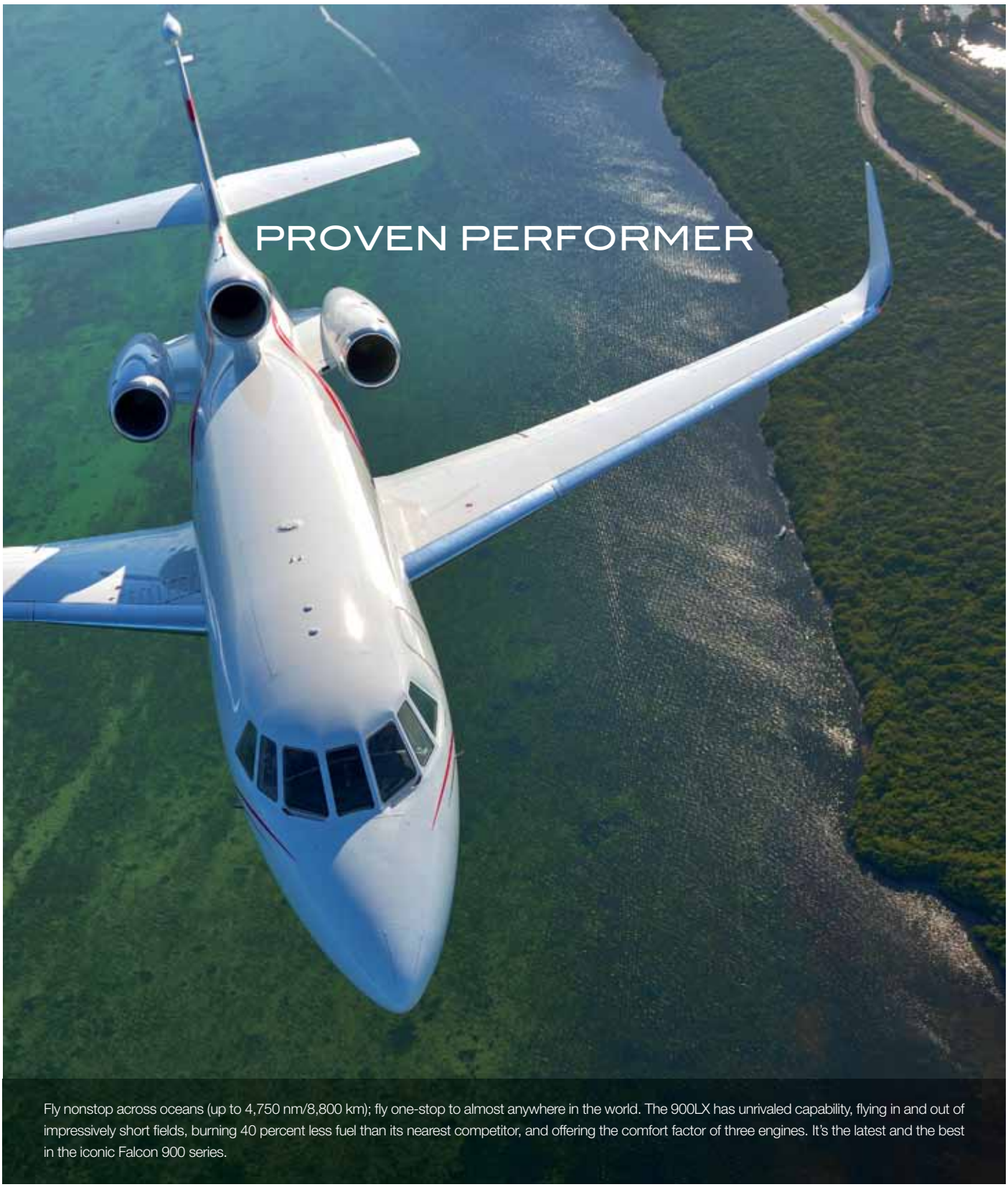
The issue includes an article on the case for differential pricing at the airports by R. Chandrakanth indicating on how to ensure the realistic growth of regional aviation in India. Also in alignment with the very promising slogan of the government – regional connectivity. On the front of regional aviation again, the E-Jets E2 prototype by Embraer, which has been in news since quite some time, has now been launched by the company which was well received and well attended by various operators based globally. A report on the same has been included indicating as to how Embraer is creating waves in regional aviation market.

The massive victory by Northrop Grumman in the race for the contract worth $80 billion to design, develop and manufacture the next-generation long-range stealth bomber from its home-based customer US Air Force (USAF) has been historic. Induction of the fifth-generation bomber is an urgent requirement of the USAF and would be a strategic investment for national security for decades to come. The implications and aftermath of this historic development within the aerospace and defence sectors have been analysed and covered by our expert Air Marshal Pandey.

The long awaited contract for 22 Apache attack helicopters and 15 Chinook heavy-lift platforms have finally been signed in September this year. Boeing is highly optimistic about its business prospects in India and is looking forward to even higher levels of engagement with India and especially with the Indian aerospace industry as the company prepares for its centenary celebrations. The perspective by Pratyush Kumar, President of Boeing India, refers to the growing ties between the two nations both in the military and civil aerospace industry and the road map for the future. In fact the strategic partnership between India and the US is expected to enter a new phase with the visit of Manohar Parrikar, the Minister of Defence, to the US in the second week of December this year. In this issue, Ranjeet Kumar has a report on the forthcoming visit. On the military front, the issue also includes an article on the importance of life-cycle cost which must be taken into account at the time of clearing and signing of any future contracts for Indian forces.

All these and much more in this issue of *SP's Aviation* which awaits feedback from its valuable readers. Welcome aboard!

JAYANT BARANWAL
PUBLISHER & EDITOR-IN-CHIEF



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NEWS:

INDIAN AIR FORCE GROUNDS TEJAS FIGHTER JETS

Within months of induction of the Tejas fighter jets into the Indian Air Force (IAF), the fleet has been grounded because of problems with their landing gear. Sources in the Ministry of Defence say that IAF pilots encountered problems with the landing gear of Tejas twice, first in Bengaluru and the second time in Jaisalmer after a round of weapon trials at the Pokhran range. After the second incident, the Tejas fighter jet was flown from Jaisalmer to Bengaluru with its landing gear extended. The upshot: the entire fleet consisting of fighters with the IAF, the naval variant, trainers and prototypes have been grounded. Sources in the Hindustan Aeronautics Limited (HAL) at Bengaluru confirmed that this particular snag was the cause for the grounding of the Tejas fleet.

PHOTOGRAPH: SP GUIDE PUBNS

VIEWS:

THE EFFORT OF THE Indian aerospace industry to produce an indigenous light combat aircraft (LCA) of the fourth-generation for the IAF and the Indian Navy is in the news again; but for the wrong reasons. Conceived in 1982, the second project coming after the not-very-successful platform HF-24, to design, develop and manufacture the indigenous LCA actually got off the ground in 1993 and the Technology Demonstrator I undertook its maiden flight on January 4, 2001. The platform was subsequently christened as the 'Tejas' by the then Prime Minister Atal Bihari Vajpayee. After the grant of initial operational clearance, the first aircraft was handed over to the IAF on January 17, 2015, by the Minister of Defence, Manohar Parrikar. The Final Operational Clearance is keenly awaited.

Initially, the IAF had planned to induct 140 of the LCA Tejas Mk I. However, as the aircraft was grossly underpowered as also failed to meet with a number of qualitative requirements stipulated by the IAF, the initial order has been restricted to 40 aircraft to equip two squadrons. Besides, as the Indian aerospace industry had indicated plans to develop the Mk II version of the Tejas which would take care of all the existing deficiencies, the IAF preferred to wait and induct the remaining 100 of the new product. As things stand, the initial order of 40 aircraft is expected to be delivered by the end of the current decade. Of the two squadrons under induction, the first is planned to be based at the Air Force Station in Sulur, near Coimbatore in Tamil Nadu.

The Tejas Mk II is planned to be equipped with the more powerful GE F-414 engine and consequently is expected to deliver better performance compared to the Tejas Mk I. However, there are ominous signs that the Tejas Mk II project is in limbo and may even be abandoned. In fact, the IAF has been advised by the Minister of Defence to induct the Tejas Mk IA instead which is to be an improved version of the Tejas Mk I and is said to be marginally more proficient. It will carry the active electronically scanned array (AESA) radar from the Israeli firm ELTA Systems. Besides, it is expected to be around 1,000 kg lighter. Reports say that weight reduction of 800 kg will be achieved by redesigning the landing gear which has been described as 'over-engineered'. It is quite a bizarre coincidence indeed that soon after the IAF celebrated its 83rd birthday, the Tejas fleet has been grounded on account of problems with the undercarriage which is in any case being taken up for redesign for the Tejas Mk IA.

Grounding of fleets especially in military aviation is a routine feature. Essentially, this is an exercise undertaken as a precautionary measure following technical failure or malfunction that cannot be immediately explained and needs more elaborate, in-depth and comprehensive investigation aimed at preventing recurrence and evolving new procedures to cope with the situation in case of recurrence of the problem. In the IAF itself, such an exercise has been undertaken with the Su-30MKI and the Dhruv helicopter fleets. Besides, technical glitches are not uncommon in the development of new platforms. Even the most sophisticated aircraft developed by the leading global aerospace majors have gone through similar experience not only during the phase of development but also during operational service. Grounding of the fleet of Tejas Mk I on account of issues with the landing gear therefore should be seen as a positive step and not be a cause of collapse of confidence in the programme. HAL will hopefully identify and resolve the issue.

Despite its afflictions and reservations generally expressed by sceptics, development of the LCA Tejas has truly been a challenging project given the lack of experience, capabilities and infrastructure available to the Indian aerospace industry at the time of commencement of the project. One notable feature of the three-decade-long project has been its flawless accident free record. This indeed is unprecedented in the history of development of new platforms the world over. The determination of the Indian aerospace industry to drive the project has also been commendable. However, in retrospect, a more intimate involvement of the IAF and better synergy between the users and the aerospace industry in the project right from the word go, might have produced better results. Undoubtedly, the technologies that have been developed in this project and the experience gained so far would help strengthen the foundations of the Indian aerospace industry. SP

—By Air Marshal B.K. Pandey (Retd)

PARRIKAR TO VISIT USA

Defence Minister Manohar Parrikar's visit to the US in December would be expected to propel the relationship to a new level

THE IMPENDING VISIT OF the Defence Minister Manohar Parrikar to the United States on December 9 and 10 would build on the already deep engagement between the two sides in defence and strategic arena. It is significant that the visit has been scheduled within six months of the visit to New Delhi of the US Secretary of Defense Ashton Carter in June this year during which the path for long-term defence and strategic partnership between the two largest democracies had already been cleared. Parrikar's visit would be expected to propel the relationship to a new level.

The visit is taking place on the back of reported US decision to sell F-16s and Bell AH-1Z Viper attack helicopters to Pakistan. This US decision has irked India as it intends to rearm India's arch rival with sophisticated military aircraft. which certainly are not meant for use against terrorists or the Taliban. US arms supplied to Pakistan have always been used against India and once again the Pakistani army has been successful in blackmailing the US leaders.

According to the latest US Congressional Report, the Pentagon has cleared military hardware worth $5.4 billion after the 9/11 terrorist attack on the US Defense Headquarters in Washington DC and the World Trade Center in New York. This includes the sophisticated F-16 fighters. Interestingly, the military hardware were supplied to Pakistan in the 10-year framework, for which the logic given was that Islamabad needs capacity building to fight terrorists in its border areas. However, Pakistan has always been successful in duping the US Administration, though, experts also say that the US has never been oblivious of the actual use of the weapon systems and platforms supplied to Pakistan. Though, both US and India claim to be strategic partners, US has never listened to Indian cries of arming Pakistan at the cost of India's security.

Parrikar would take forward the decisions reached between the two sides and further discuss ways and means to promote the 'Make In India' programme of Prime Minister Narendra Modi in the defence sector. The US has also evinced keen interest in asking its defence sector to manufacture in India for its armed forces and export them too, to Third World countries. Sources in the Indian Ministry of Defence said that the US and India would discuss the possibilities of raising the level of bilateral exercises and review the progress made in the joint working group on aircraft carrier as well as identify technologies that could be obtained by the Indian armed forces under the foreign military sales programme of the US Government. To create ground for the interactions between India and the US, two high level Indian delegations would be visiting the US. The India-US Defence Policy and Procurement Group will meet in Washington on November 13, in which Asha Ram, the Director General (Acquisition) would be leading the Indian side. The India-US Defence Policy Group will meet four days later, when the Indian Defence Secretary G. Mohan Kumar will have a meeting with the US Under Secretary of Defense Policy Christine E. Wormuth.

During the last visit of Ashton Carter four major issues were agreed upon. The first one was the New Defence Framework, which will build upon the earlier one and would give direction to the bilateral defence and strategic partnership for the next decade. Regarding projects the two sides finalised the joint development of Mobile Electric Hybrid Power sources and the Next Generation Protective Ensembles. The two sides had also agreed to pursue projects of co-development and co-production that will offer good possibilities for US defence sector to build defence partnership with Indian companies including the proposed 'Make In India' programme. The two sides had also agreed to take forward cooperation on jet engines, aircraft carrier design and construction, etc.

During Carter's visit, the two sides had discussed India-US strategic partnership and had also exchanged views on emerging regional security dynamics. During the forthcoming Parrikar visit to Washington, the two sides would carry forward the discussion on issues ranging from the current situation in South China Sea where the US Navy had dared the Chinese Navy to challenge, when the American warships had ventured very near to the artificial island created by China for military purposes and expanding its territorial limits in the South China Sea. Afghanistan, Central Asia, West Asia and India-Pakistan relations are also expected to figure during the talks. By ordering the 15 Chinooks and 22 Apache helicopters, the Indian Government has already impressed the US Administration with its seriousness in engaging with the US defence firms. The US is already eyeing more orders from India. It has already been reported that Boeing has offered the F-18 Super Hornets to be manufactured in India to fulfill the needs of the Indian Air Force for the medium multi-role combat aircraft. Boeing has already announced that either Apaches or the Chinooks would be assembled in India.

If these developments materialise, US-India relations will assume new dimensions as the US companies would for the first time enter Indian defence sector directly. During Parrikar's visit to the US, all these issues will certainly be explored. SP

—By Ranjeet Kumar

DEFENCE MINISTER PARRIKAR'S VISIT TO US AND EXPECTED MEETING WITH US SECRETARY OF DEFENSE ASHTON CARTER MAY KICKSTART NEW DIMENSIONS IN US-INDIA RELATIONSHIP

PHOTOGRAPH: PIB

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MEDIUM & LONG-TERM PLANS FOR INDIA

BY PRATYUSH KUMAR, PRESIDENT
BOEING INDIA

BOEING, THE LARGEST AEROSPACE company in the world, is completing 100 years next year. As we look to our second century, it's clear that India is poised to play a pivotal role in the next evolution of Aerospace & Defence (A&D). We're committed to build an A&D future together with India. Pillars of our partnership with India are: Skilling to build an aerospace ecosystem in India, accelerating our efforts on 'Make in India', and supporting India's defence and aviation customers with Boeing's state-of-the-art and reliable products and services.

Skilling India for aerospace. Boeing is deeply committed to skilling for the aerospace in India across the entire ecosystem: skilling frontline factory workers who are key to 'Make in India', training engineers who will design next-generation aerospace platforms not just for India but for the world, and supporting advanced research and development consortiums with IISc and IITs to push the state-of-the-art.

We launched the second year of skilling for aerospace manufacturing in India in partnership with NSDC. The results are extremely encouraging; the trained workers delivered world-class quality at first-pass. We achieved 100 per cent employment for the first two batches. Encouraged by this experience, we plan to significantly scale it up in partnership with NSDC and the Ministry of Defence. Founded by Boeing with IIT Bombay and GoI's Department of Science & Technology, the National Centre for Aerospace Innovation & Research (NCAIR) consortium trains and prepares Indian industry for aerospace manufacturing. The Aerospace Network Research Consortium (ANRC) with IISc Bengaluru, is another open collaboration that conducts strategic research/co-development of aerospace network technologies.

Accelerating 'Make in India'. Soon after India's PM Shri Narendra Modi launched the 'Make in India' initiative in September 2014, Dynamatic Technolgies and Boeing inaugurated a plant in Bengaluru to manufacture critical parts for the Chinook heavy-lift helicopters. In a state-of-the-art facility at a Tata company in Nagpur, Boeing manufactures advanced composite floor beams that form the 'spine' of the world's most advanced aircraft, Boeing 787-9. In July this year we announced a partnership with Tata to manufacture advanced aero-structures and aerial systems including unmanned. We have significantly upped our manufacturing activities in India, more than doubling our sourcing over the last year. Now, over half a billion dollars in product and services from India gets on our airplanes each year and we are working to increase that.

On the engineering side, Boeing has been working with India's Tier-1 IT & Engineering Services providers with a significant spread of partner engineers and engineering work statements sourced during the past decade. Boeing subsidiaries like CDG and Jeppesen also have a significant and growing engineering footprint in India. To further leverage India's deep engineering capabilities Boeing also plans to significantly expand its engineering footprint organically in the near term.

Helping our customers win. With 10 C-17 Globemaster strategic airlifters and 8 P-8I maritime surveillance and anti-submarime warfare aircraft delivered, Boeing is helping with the mission-readiness and modernisation of India's defence forces. C-17s have played a stellar role in numerous relief and rescue missions and P-8Is have enabled the Indian Navy to monitor the vast region of the ocean from the Strait of Hormuz to the Malacca Strait. The recent contracts of 22 AH-64E Apache attack helicopters and 15 CH-47F Chinook heavy-lift helicopters further strengthens our position as a long-term strategic partner for India's defence modernisation. Boeing will also continue to work closely with its defence customers to give superior mission readiness in servicing all our platforms.

India learned to fly on the wings of Boeing. More than 75 years ago, Tata Airlines operated DC-3 aircraft. Since then, with the 707, 747, 777, 737 and the game-changing 787, Boeing has been the mainstay of India's aviation sector with airlines such as Air India, Jet Airways and SpiceJet. Twenty-one 787s are now with Air India serving them to expand international routes and fuel-efficient operations. Commercial Aviation Services will also be a major focus area in providing our commercial customers a path towards achieving world-class operations.

Across all these areas, Boeing is ***"bringing the best of Boeing to India and bringing the best of India to Boeing"*** in a true win-win partnership. SP

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INDIAN CIVIL AVIATION – READY FOR TAKE-OFF?

The Draft National Civil Aviation Policy, at macro level, has defined the long-term road map for catapulting India from the ninth to the third largest aviation market in the world by 2020

BY AIR MARSHAL B.K. PANDEY (RETD)

ON COMING TO POWER, the Narendra Modi-led government appeared to be set to translate into reality its commitment in the election manifesto with regard to the civil aviation sector. Topping the agenda was the development of low-cost airports in Tier-II and III cities to expand air connectivity through regional aviation particularly to areas that are remote or not easily accessible.

The aim was to transform the image of the civil aviation sector from being 'elitist' to one 'for the masses'. On May 29, 2014, P. Ashok Gajapathi Raju, Minister of Civil Aviation, stated "We will strive to create a level playing field for all the players and make the aviation sector more people-oriented." In the pursuit of this objective, the Ministry of Civil Aviation (MoCA) issued a Draft Civil Aviation Policy in November 2014 that was available in the public domain and all stakeholders were invited to offer comments. Based on the inputs, a comprehensive Draft National Civil Aviation Policy (NCAP) 2015 incorporating provisions for wide-ranging reforms was unveiled on October 30, 2015. Comments have now been invited from the stakeholders and the public within three weeks after which the draft document would be submitted to the Cabinet for approval.

Currently, the NCAP 2015 covers development of airport infrastructure, enhanced regional connectivity, liberalisation in open skies regime, development of the air cargo sector, improvement in helicopter services, development of maintenance, repair and overhaul (MRO) sector, ground handling and airport security.

PHOTOGRAPH: PIB

FOCUS ON REGIONAL AVIATION

The major focus of the Draft NCAP 2015 is manifest in the Regional Connectivity Scheme (RCS) to be effective from April 1, 2016. It is designed to ensure the viability of regional aviation to make air travel accessible to the larger segments of society at affordable costs. The policy has reiterated the intent of the government to improve airport infrastructure through public-private partnership in Tier-II and III cities. However, as operations to these locations at new low-cost airports are not likely to be profitable, the scheduled commuter airlines (SCA) operating to these destinations will get financial support from the govern-

ISSUES WHICH NEED URGENT ATTENTION

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- Streamlining the domestic air charter Industry.
- Resolution of the Controversial 5/20 Rule.
- Greater deregulation, transparency and e-governance.
- Skill development for the civil aviation industry.
- Promotion of sustainable aviation practices.
- Reforms in the Directorate General of Civil Aviation.

ment by way of Viability Gap Funding (VGF) to compensate for losses. SCA will also benefit from lower taxes on ATF as well as waiver of airport charges. For payment of customs duty, SCA will be treated on par with scheduled carriers provided they do not undertake charter operations. An SCA can now be established with a paid-up capital of ₹2 crore with aircraft less than 100 seats and no limitation of the size of the fleet. SCA will be permitted to enter into code-share agreement with other airlines.

The burden of VGF will be shared between the Central and state governments in the ratio 80:20. The Central Government plans to generate resources of ₹1,500 crore annually for VGF through a two per cent levy on all domestic and international air tickets. This will undoubtedly make travel more expensive for passengers on legacy carriers. Other concessions proposed are for the state governments to provide land free of cost for airport development, lowering of VAT on ATF to one per cent or less, no excise duty on ATF, no service tax on tickets purchased under RCS and air fare limited to ₹2,500 per hour of flight.

The government has decided to retain the route dispersal guidelines (RDG) which require airlines to dedicate a certain percentage of the total number of flights undertaken to remote areas. As per the existing mandate, airlines will need to deploy at least 10 per cent of the capacity on the Category-II routes in the North-eastern region, Jammu & Kashmir, Andaman & Nicobar Islands as well as Lakshadweep.

BUSINESS AND GENERAL AVIATION

The Draft NCAP 2015 has unfortunately not focused adequately on business and general aviation which is a critical component of the Indian civil aviation industry. The draft policy has addressed the concerns of only the foreign air charters making it easier for them to operate to and within India. However, the Draft Policy has failed to remove the impediments the domestic charter industry is routinely confronted with. It has also overlooked the exorbitant and irrational taxation on import of business and general aviation aircraft, which has retarded growth of this sector. The government needs to understand the contribution of this segment of the industry to the national economy.

The Draft NCAP 2015 aims to unshackle helicopter operations, a step long overdue. The government will support growth of helicopters for remote area connectivity, intra-city movement, tourism, law enforcement, disaster relief and medical evacuation. As per the new policy, helicopters will be free to fly from point-to-point without prior clearance by air traffic control (ATC) when operating in airspace below 5,000 feet and outside areas under the control of the ATC and in areas that are not categorised as 'prohibited' and 'restricted'. Helicopter operators will only be required to file flight plans at the nearest ATC. The government also proposes to facilitate the development of four helicopter operating hubs. A more comprehensive set of regulations exclusively for helicopter operations will be notified by April 1, 2016.

AIR CARGO

The primary thrust of policy change in this sector that has not been privileged to have the healthy growth rate that matches the existing potential is to streamline cargo handling to reduce delay in the shipment and clearance of cargo transported by dedicated freighters. The Air Cargo Logistics Promotion Board (ACLPB) has been tasked to formulate an action plan to minimise dwell time of air cargo from aircraft to truck' and introduce paperless processing. It is also proposed to develop an Advanced Cargo Information System and round-the-clock customs clearance.

MAINTENANCE, REPAIR AND OVERHAUL

The Draft NCAP 2015 has provided the much needed impetus to the Indian MRO industry through a number of reforms proposed which include tax incentives and simplified regulatory provisions. The Draft NCAP 2015 aims to alter the 'High Tax Regime' image of the MRO industry through abolition of service tax on MRO 'output services', duty waivers on tools and increasing tax-free use of spare parts from one to three years. It has also proposed easing of rules and rationalisation of royalties and levies by airports on MRO service providers. The state governments would also be encouraged to reduce VAT on MRO services. Airport royalty and additional levies on MRO service providers will be rationalised in consultation with airport operators. The provision under AIC 3 of 2010 of DGCA shall be reviewed to declare MRO as a separate category instead of clubbing it with ground handling for security procedures and remove restrictions on foreign registered aircraft for MRO.

THE 5/20 RULE

One aspect in which the Draft NCAP has dithered is the 5/20 Rule that has acquired a modicum notoriety in the Indian airline industry. Apparently, the government has decided to seek further comments from stakeholders before taking a final decision. The Draft NCAP 2015 has put forth three options, i.e. abolish the norm, continue with it or link overseas flying rights with domestic flying credits. "This is one significant, archaic and regressive policy that would have unbridled the entire sector and shown optimism not only to current incumbents but also to potential future investors. It is disappointing that the draft is still where we were on this several months ago," said Mittu Chandilya, CEO, AirAsia India.

CONCLUSION

The Draft NCAP 2015 has drawn a mixed response from the civil aviation industry. Described as 'progressive' by most, it has addressed most of the key policy challenges confronting the Indian civil aviation industry. The draft policy provides for major boost to regional aviation through enhancement of airport infrastructure, boost to MRO and air cargo sectors, regulation of air fares, rationalisation of the price of ATF, taxes and airport charges as also simplification of regulatory framework and procedures.

However, it has been disappointing for the business and general aviation segment as the Draft Policy has completely ignored the interests of this important part of the industry. Also, there will be the need to build a consensus between the Centre and the states on fiscal incentives and other responsibilities assigned to the latter. This could easily prove to be the proverbial Achilles' heel of the policy owing to political differences between the Centre and the state governments.

Some deficiencies notwithstanding, the existing policy document has defined the long-term road map for catapulting India from the ninth to the third largest aviation market in the world by 2020. SP

DRAFT POLICY 2015: GA & BA PERSPECTIVE

The Draft does mention government's goal to provide level playing field to aviation subsectors, including GA/BA. However, it has missed out on some very key issues that have plagued the industry for over two decades now.

THE MUCH-AWAITED DRAFT NATIONAL Civil Aviation Policy (NCAP 2015) was placed in public domain on October 30, 2015. It is aimed to state government's vision on growth of aviation sector in India for the next 10 years. In the coming weeks, the pros and cons of this draft policy would be keenly discussed amongst the stakeholders. Civil Aviation Ministry aims to come out with the final NCAP 2015 by the end of this year, after incorporating feedback from all stakeholders.

General and business aviation (GA/BA) industry, considered the nursery for the entire aviation industry, has been waiting for too long to get its due share in the new policy. The introductory part of draft NCAP 2015 does mention government's goal to provide ecosystem and level playing field to various aviation subsectors, including general aviation. However, the subsequent parts of Draft NCAP have missed out on some very important issues that have plagued the GA/BA industry for over two decades now.

Roll-back of Import Duty. The growth of general and business aviation, which comprises essentially private business flying and corporate/charter business flying, started off on a very positive note immediately after opening of Indian economy in the beginning of 1990s. The flexibility, reach and efficiency provided by GA/BA have been instrumental in inclusive economic growth of nations across the world and, the same happened to Indian economy up to the year 2006. There was no import duty on aircraft and its spares till then and, GA/BA industry grew to its potential, enabling faster inclusive growth of Indian economy. There seems to be no valid reason for imposing import duty on aircraft in 2007 for GA/BA industry. There has been no domestic GA/BA manufacturing industry to protect and, even revenue received on such imports from 2007 to 2014 has been a miniscule amount of around $20 million or less than ₹130 crore. This ill-conceived fiscal decision of import duty, which took GA/BA industry into deep depression, in fact, caused loss of revenue to government in terms of reduced receipt of indirect taxes that would have accrued to the exchequer through increased GA/BA operations. In the last two FYs, GA/BA industry in India has recorded negative growth. NCAP 2015, being a national agenda for growth, should have addressed this foremost issue with complete roll-back of irrational import duty on GA/BA aircraft.

Infrastructure Issues of GA/BA. NCAP was expected to address the issue of separate and equitable infrastructure for GA/BA industry, especially at metro airport where demand for such operations exists at present. The issue of using provisions of 'once in 10 years review' in the agreements, signed with the private operators of these airports, should have been clearly stated in the NCAP 2015, as such review is due soon. Further, all the future agreements, under PPP model would adequately take care of genuine infrastructural requirements of GA/BA industry on pan-India basis, should also have been clearly stated in the NCAP.

Regulatory Bottlenecks for GA/BA Growth. GA/BA industry has been persistently demanding regulator's recognition of aircraft management companies (AMC) as the sole means to achieve consolidation in the industry for cost-effective operations. It needs to be understood that under-utilisation of costly aviation assets would ultimately harm aviation industry and, not ensure sustainable growth of GA/BA. When such companies can prosper all over the world, especially in developed economies, there is no reason for these to be not yet recognised and allowed to operate in India. While intent to issue separate CARs, for scheduled commuter airlines (SCA) and charter operators, is a step in the right direction, it is highly unfair and unjustified not to allow SCA to undertake charter operations. We are all aware that demand for SCA is still very low and, flexible or multiple use of SCA aircraft is the only option to make such operations viable for at least 10 more years. Implementation of e-governance in DGCA is a very welcome step and would help to eliminate procedural delays, including time taken to induct new aircraft, which presently may extend to more than a year in some cases. Hopefully, the new DGCA's CARs and the e-governance would ensure such inductions of new aircraft happen in a matter of couple of months.

IT IS THE TIME TO TAKE A LEAP FORWARD AND CHANGE MISPERCEPTIONS IN CERTAIN MINDS ON THE ROLE OF GA/BA IN ENSURING QUICKER INCLUSIVE ECONOMIC GROWTH OF OUR NATION.

Finally, the tremendous effort put in by MOCA for the Draft NACP 2015 needs to be appreciated by all. It is the time to take a leap forward and change misperceptions in certain minds on the role of GA/BA in ensuring quicker inclusive economic growth of our nation.Time for soft option of perpetuating ill-conceived import duty, in 2007, is fast running out, if we really wish our GDP to grow at 9 to 10 per cent, as exhorted by our able and visionary Finance Minister very recently. SP

—By Group Captain R.K. Bali (Retd)
Managing Director, Business Aircraft Operators Association (BAOA)

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DRAFT POLICY 2015: GA & BA PERSPECTIVE

While addressing some major issues on different areas of the industry, the draft policy does fall short on some key aspects, which need to be addressed before the final policy is made effective.

THE DRAFT NCAP 2015, released by the Ministry of Civil Aviation, is a step in the right direction to create an enabling environment for the growth of the industry. While addressing some major issues on different areas of the industry, the draft policy does fall short on some key aspects, which need to be addressed before the final policy is made effective.

One of the key shortfalls of the NCAP is that is **does not address the concerns** of the General and Business Aviation (GA & BA) Industry effectively. In fact, there is only a superficial reference about the industry. One of the probable reasons for this could be that the government still views the GA & BA industry as an elitist industry, not serving the masses of the country, except when operating for remote and regional connectivity. Nothing could be further from the truth. GA & BA is an enabler, which allows Indian industry leaders the flexibility to travel to remote and poorly connected regions of the country, and allows them to establish key industrial projects in such areas, thereby adding to the overall economic growth and development of the area. The economic benefits of opening up remote areas to industrial development cannot be overemphasised, and this would not be possible if the Captains of the Indian industry were not facilitated to travel to these areas without waste of time and in a secure environment. The GA & BA aircraft provide this flexibility to them. It is also prudent to put on record that the number of aircraft and helicopters that are operating under the GA & BA permit are twice the size of the commercial scheduled airlines, hence it would not be wise to ignore the just requirements of this industry.

The issue of **import duties** on import of GA & BA aircraft has been ignored and needs to be addressed on priority. While we understand this needs the blessing of the Ministry of Finance, it is essential the policy addresses this concern. Facts and figures are available to show that the growth of the GA & BA industry has been adversely affected ever since these duties have been imposed in 2007. Regretfully, the government has also not been able to add to its revenue with these duties, as it had hoped to do. This needs to be corrected on priority.

Besides this, the Draft NCAP falls short about addressing the issues of the **infrastructure requirements** for GA & BA. The present airports, both AAI and privately operated, have not planned for the operations of these aircraft and hence there is always an area of conflict between the two. The policy needs to clearly spell out the infrastructure requirement of this industry as something that needs to be included in the master plans of airport development. The NCAP, very sketchily, speaks about creating four hubs for development of helicopter operations in the country. The rationale for this is not understood. Why only four? Helicopter hubs need to be created in every state of the country, and in states with poor road connectivity, such as Arunachal and Himachal Pradesh, you probably need to plan for more than one hub. Similarly, where required, special airports for GA & BA needs to be planned, which should also house the requirements for affiliated support services such as MROs etc. as is done in other parts of the world.

Another key area which the NCAP should look at and address is the **modernisation of key regulators**, such as DGCA and BCAS. It is disheartening to see, that in this age, the DGCA and other agencies still continue to work on the archaic systems of pushing files from desk to desk, with all the regular ills of this system and manipulations still in place. The NCAP must address, with timelines, as to how it aims to modernise these institutions with new technology and e-governance, and bring the human factor down to the minimum. Clearances need to be filed and obtained online with the tap of key, whether it be for licence renewals or flight clearances. It is unbelievable that today, a company or person who wants to buy and operate an aircraft, needs a lead time of one-and-a-half years, from the time he decides that he wants to go ahead, till the time he actually starts flying in one. He needs to deal with 10 different agencies before such permissions are given. In the modern jargon of 'ease of doing business in India,' the aviation industry seems to be left far behind. The NCAP needs to correct this.

In the **skilling section**, the NCAP needs to also address as to how they aim to make these organisations more professional and responsive. The attitudes of 'big brother' approach needs to go, and these organisations needs to work in a collaborative manner with the industry to encourage healthy practices. Lastly, best global practices need to be adopted, rather than the constant effort to trying to 'reinvent the wheel' and retaining centralised control on all aspects of operations and maintenance.

The Policy does address the setting up of **Scheduled Commuter Airlines**, and remote and regional connectivity quite effectively. Just a word of caution; one size does not fit all. In trying to define the fare for such connectivity at ₹2,500 per hour, the policy is tying itself down, and not allowing flexibility. It is quite likely that certain parts of the country may be economically affluent, and require a connectivity, rather than subsidies. These could be holiday resorts, industrially rich towns, etc. which can afford to pay higher fares, but do need the connectivity. Why should the government allow them subsidies, which can probably be utilised better in other areas?

To conclude, the Draft NCAP is good start, but still needs a lot of work if it truly has to create an enabling environment for the growth of this industry. Ministry needs to study these issues carefully, and address them before finalising it. **And lastly, and importantly, we would request the NCAP to lay down a timeline by which the Aircraft Rules of 1937 can be rewritten and adapted to 2015 as part of the policy. The time for that has come.**

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

COST OF OWNERSHIP

From a top-end BBJ3 (estimated cost $99 million), to a very light jet such as Phenom 100 (estimated cost $4.4 million), the cost of owning an aircraft is certainly high as there are recurring costs

BY R. CHANDRAKANTH

ILLUSTRATION: ANOOP KAMATH

WHEN INDIA'S RICHEST MAN MUKESH AMBANI of Reliance Industries travels in style in his Boeing Business Jet 2 (BBJ2), estimated to have cost $73 million, it does not surprise anyone. In 2007, when he gifted his wife Nita Ambani on her birthday, a $60-million Airbus ACJ319 corporate jet with entertainment cabins, a sky bar and fancy showers, this again was not surprising. The richest of Indians flying luxurious private jets is passé. They have the money. They have the wherewithal. They just can fly anywhere in the world without once thinking about the cost, I guess, till such time they (like Vijay Mallya who had to shift out his private jet ACJ319 out of Kingfisher Airlines) land in a major financial mess. Moving away from the uber rich, let us look at how one can broadly work out cost of business jet ownership in India. The options available are (a) outright private jet ownership (b) jet charters (c) fractional ownership and (d) jet cards.

PRIVATE JET OWNERSHIP – FOR THE RICH & FAMOUS

From a top-end BBJ3 (estimated cost $99 million), to a very light jet such as Phenom 100 (estimated cost $4.4 million), the cost of owning an aircraft is certainly high as there are several recurring costs. The Gulfstream G650 is priced at $72.5 million; the Bombardier Global 7000 is pegged at $68 million; the Dassault Falcon 7X and the Embraer Lineage are at $52 million apiece; the Phenom 100, a very light jet is at $4.4 million. Besides the cost of acquisition of the aircraft, one has to factor

in salaries for the pilot and other crew; maintenance of the aircraft, etc, and this highly variable, depending on the aircraft, the business model, etc.

AIR CHARTER COSTING

For an air charter company, the broad costing includes (a) aircraft purchase/lease (b) operational expenses (licence fees, salaries of pilots and other staff; aviation turbine fuel; airport taxes and other charges) and (c) maintenance cost. With the business in mind and the services provided, the charter operator has to factor in all the costs, plus the squeezed margins to put a price tag on what the charter is going to cost. Maintaining a business jet as per global safety norms is an expensive affair. As per the *Economist* the profit margins for the airline industry was less than one per cent on average over six decades. One can imagine the plight of the charter operator.

Though the airport charges are less for aircraft under 100 tonnes, private jet operators/charter operators are constrained with availability of hangar space and other related infrastructure for them to offer the best of services to customers. The landing and parking charges depend on the aircraft's weight, seat configuration, landing time and duration of use of parking and housing facilities 'etc' at different airports which have their own pricing methodology. The landing charges vary between ₹436 for a very light jet and ₹14,000 for ultra large business jets. For a person availing charter service, he or she would have to often pay a 'dead-head' (return journey of the flight), even though the person is flying only one way.

CREW COST, KEY ELEMENT

An important factor in the aviation industry is human resources, particularly the flying crew. Business jet operators are a harried lot, unable to find the right candidates for their operations and the attrition rate is said to be high, as these pilots are constantly on the lookout for better career options, commercial airlines being their prime destination. The charter operator has to keep in mind the attrition rate and offer salaries which sometimes may not be commensurate with market conditions.

The pilots themselves would have invested heavily into their training programmes and certainly would like better returns on their investment. According to a report, one has to spend between $7,500 and $12,000 to attain the FAA issued Private Pilots' Certificate. In India, the Delhi Flying Club charges ₹5 lakh to ₹6 lakh for private pilots' licence, while a commercial pilots' licence (CPL) may cost anywhere between ₹22 lakh and ₹25 lakh.

JET HIRE RATES

As executive jets are broadly classified as very light jets/light/small jets; medium/midsize; and full-size/large or heavy jets, the cost of hiring depends on the jet chosen. The hourly jet rates vary from aircraft to aircraft and here is an indicative rate list.

Class of Jet	Jet Example	Range	Cost Flight Per Hour
Small / Light	Cessna Citation Beechcraft	2,300	$3,600 $5,400
Medium / Midsize	Learjet 60	3,700	$5,850
Larger / Midsize	Citation Gulfstream	3,910	$6,400 $9,450
Large / Full size	Falcon 2000 Global Express	4,600	$12,800

PHOTOGRAPH: DASSAULT AVIATION

FRACTIONAL OWNERSHIP

The concept of fractional ownership of business jets has not caught on in India, where it is either direct ownership route or the charter route. Even the concept of jet cards has been making tardy progress. The normal share divisions in fractional ownership are 'Whole', 'Quarter', 'Eighth', and 'Sixteenth'. Fractional ownership can offer the advantage over charter, whereby the 'dead-head' is not charged against the end customer.

JET CARDS GIVING EASY ACCESS

There are several companies which offer jet cards which allows companies and individuals to buy blocks of flight time from charter operators, besides having their own aircraft. The arrangement works good for the charter operator whose flight utilisation

DASSAULT FALCON 7X DOES REMAIN IN THE BRACKET OF HIGH END JETS. THE COMPANY'S PHILOSOPHY, HOWEVER, OF GIVING BEST VALUE FOR THE OPERATORS' MONEY MAKES FALCON JETS ONE OF THE MOST SENSIBLE OPTIONS AVAILABLE TODAY

time goes up and for the jet card member there is easy availability of aircraft.

In 2013, Baron Aviation launched reportedly India's first jet card programme. Baron has committed to buying blocks of flight time from several Indian charter operators, including Raymonds Aviation, which owns a Challenger 604 and two of the helicopters. It is seeing demand from new private aviation consumers, including wealthy individuals flying to the Middle East, particularly Dubai on shopping trips. The company, which is part of the Baron Luxury & Lifestyle group, says that it is contracting for between 70 and 100 per cent of the operators' available fleet hours.

The group offers three levels of Baron Eagle membership, with members establishing a prepaid deposit that is used to cover the cost of flights. At the Platinum level, members pay $3,30,000 for up to four cards that can be transferred among individuals and with refunds for any amounts not spent on flights. A gold card costs $80,000 and allows bookings for domestic or international flights from India. The silver card costs $40,000 and is for domestic flights only.

According to Baron CEO and Chairman Rajeev Wadhwa, demand for international flights by Indian private jet travellers has increased by 16 per cent since 2011. He feels that India's rising ranks of billionaires view a jet card programme as a more viable alternative to full aircraft ownership.

Similarly Kochi-based K-Air premium jet card programme gives access to a good aircraft fleet in India and Asia to its members. K-Air states that it guarantees aircraft availability with as little as 10 hours notice and there is a choice of up to 20 aircraft types including helicopters. Jet card members can buy blocks of 15/30/50/100 hours and renew or walk away when complete.

Card Type	Silver	Gold	Platinum	Titanium
Flight Hours	15	30	50	100
Card Amount	₹34,75,000	₹45,00,000	₹75,00,000	₹1,40,00,000

The pricing includes airport charges, night charges and it varies depending on the category of aircraft chosen and the destination. Each trip is calculated based on flying carried out and the amount deducted from the Premium Jet card annual charges.

There are many companies that sell jet membership, or block-time cards. These are either licensed resellers of unused fractional shares, or they are charter brokers who make arrangements with charter companies who sell blocks of time to them, at a discounted rate.

JETSETGO

At a time when business aviation is emerging in India, we have a new business model taking birth. Kanika Tekriwal, CEO of JetSetGo Aviation Services, has launched India's first online marketplace for private jets and helicopters. JetSetGo has access to a fleet of 300 plus aircraft. JetSetGo is an aggregator of private jets and helicopters. It allows charter customers to book a private jet online by entering travel details. The customers can get to see online real time availability of aircraft and prices and once the customer selects, JetSetGo reconfirms with operator after which a minimal booking deposit is made. After the balance is paid JetSetGo takes over to ensure that the customer gets to travel to his or her destination at very competitive costs. Entrepreneurs like Kanika are changing the face of private jet travel in India, which till now has been prohibitive. JetSetGo has raised an undisclosed amount of funding from Yuvraj Singh's startup fund YouWeCan Ventures. The company will use funds for improving service and marketing.

AIRCRAFT MANAGEMENT, THE WAY TO GO

One way a private jet operator can defray his costs is by offering the jet to an aircraft management company, though nascent in India. The aircraft management company provides all the support such as pilots, maintenance crew; complies with DGCA requirements; flight planning, etc. By offering the aircraft to an aircraft management company, the owner can lower the ownership costs, while paying annual fees to the aircraft management company. The advantage is that the utilisation of the aircraft improves considerably and an aircraft up in the air makes money than while on the ground. SP

COOL, COMFORTABLE & CONVENIENT

There are many reasons to fly by private jet charter, avoiding all the price fluctuations of commercial airlines and the rigmarole that is attached to it

BY R. CHANDRAKANTH

ILLUSTRATION: ANOOP KAMATH

ALMOST 10 YEARS AGO, as a journalist I was visiting an iron ore mine in Bellary district of Karnataka. From Bengaluru to Bellary the distance by road is about 300 km, but way back the national and the state highways were not as good as they are now. The average time taken by road then was about 8 hours due to poor road conditions. In those days, the iron ore sector was riding high, exporting to the world market. Some of the iron ore companies in Bellary were proud owners of private jets. MSPL was one of them and we few journalists were ferried to the remote location in Hospet in the company's P-180 Avanti II. This was the first time that I travelled in a private jet and the experience was amazing as it offered – time-saving, com-

fort and ease of access to the remote location. It was a novelty then and the company ended up getting good reports from the journalists. Private jet travel, in a way, helped the company get positive reviews. Subsequently, many of the iron ore companies landed in trouble with stricter governmental controls and some of them had to sell their private jets to stay afloat.

Ten years down the line, the aviation scenario has changed considerably. While the scheduled operators are expanding their network, there are still many areas which they are not just able to cover for reasons of demand; infrastructure and aircraft types. This gap is getting filled partially by private jet operators and other modes of transportation.

Even though it may seem that private charters are for the rich and famous only, of late, several operators are offering packages, whether it is for religious tourism or for private travel, which are attractively priced. There are many reasons to fly by private jet charter, avoiding all the price fluctuations of commercial airlines and the rigmarole that is attached to it.

REMOTE CONNECTIVITY

One of the distinct benefits of private jet travel is that unserved and even underserved destinations by airlines can be covered easily by private jets, particularly in India where there are over 400 airstrips. All that a private jet requires is a paved runway. In the US, there are over 5,000 airports that private planes can use as against the 500 airports for airlines, which means that in a private jet you can often land closer to your true destination. Many historical and religious places in India are in far-flung areas and they can be accessed by private aircraft, be it a jet or a helicopter with ease. For instance, the most popular destination is Agra and it does not have proper airline connectivity. The Kheria airport is under the Indian Air Force and there is a proposal to develop a greenfield international airport, but there is adequate demand for private air travel to Agra. Similarly, destinations such as Darjeeling, Ranthambore, Bandhavgarh, to name a few, lack airports and require long car rides to reach.

ONE OF THE DISTINCT BENEFITS OF PRIVATE JET TRAVEL IS THAT UNSERVED AND EVEN UNDER-SERVED DESTINATIONS BY AIRLINES CAN BE COVERED EASILY BY PRIVATE JETS, PARTICULARLY IN INDIA WHERE THERE ARE OVER 400 AIRSTRIPS

UNBEATABLE CONVENIENCE

The unique selling proposition of most air charter operators will be convenience of travel. At short notice, even as little as 10 hours, a private aircraft can be requisitioned by a customer to attend that important business meeting or a family emergency or any other contingency which no other mode of transport provides the speed. Unlike a commercial airliner where a passenger has to go through check-in and security formalities, with stipulated timelines, a private jet allows the convenience of hopping on to the aircraft almost anytime. Invariably there is no scanning of passenger bags at the private airports; no removal of shoes, belts, jackets, laptops, etc; no waiting in queue for business class to board first and so on. Sometimes airlines fly at odd hours

PHOTOGRAPH: EMBRAER

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which means one has to get up at odd hours and travel to the airport which can be completely avoided in private travel.

SPEED

It goes without saying that flying is the fastest mode of transport currently. In case of a private jet, since it covers invariably short distances non-stop, it is the fastest, sometimes even beats airlines as they have to go through a series of formalities before take-off and prior to landing. In remote locations, the private jets have the runway all for themselves. The turnaround times of these jets are also amazing as the number of passengers are few and luggage is minimal, the crew can get the engines soaring at double quick time. Even if one opts to travel from a busy airport, private jets can depart from a small facility called a fixed based operator (FBO), which cuts out all the chaos of a commercial terminal. The only hitch here is that at busy airports the mainline airlines are given preference in terms of take-off, landing, parking bay, etc.

PRIVATE AND CONFIDENTIAL

One of the greatest advantages of private jet travel is that it remains 'private' which many celebrities, VIPs and others who have the money and clout would prefer. A celebrity can almost drive up to the jet in his or her limousine and hop on to the aircraft without even being noticed. Whereas in commercial flights, celebrities, even if they are travelling first or business class, will not have privacy and chances are that their moments in the air may be compromised.

OFFICE IN THE SKY

Commercial airlines, which have now vastly improved on in-flight entertainment, however, does not provide any facility wherein a team of officials may not be able to sit in conference. This is quite possible in a private jet due to seat configuration. On a private charter, passengers can conduct business – on a laptop or conference call – without worrying who is listening or watching or who is being disturbed.

FLEXIBILITY

Depending upon the number of passengers travelling and the distance, the customer has the flexibility to choose from the many aircraft available – it could be a very light jet; midsize jet or a large jet. The package of travel is also an option that one can choose – wherein surface transportation, accommodation and food are taken care of.

LUXURY

No doubt, private jet travel is associated with luxury, it need not always be. As many corporate houses have private jets to ferry their executives, customers and other stakeholders to remote plants/offices to conduct business in a day and return. One can walk around the aircraft, change seats, take a nap if you will in the bedroom (some have that luxury) or just take a shower before disembarking, to be fresh for the meeting. Indeed, private jet travel provides for luxury with sleeping quarters, inflight catering and entertainment and on ground limousine services.

UNLIKE A COMMERCIAL AIRLINER WHERE A PASSENGER HAS TO GO THROUGH CHECK-IN AND SECURITY FORMALITIES, WITH STIPULATED TIMELINES, A PRIVATE JET ALLOWS THE CONVENIENCE OF HOPPING ON TO THE AIRCRAFT ALMOST ANYTIME

With all the above features falling in place, private jet travel indeed is relatively stress free (imagine going through long queues, security scan, frisking, etc). Private air travel is no doubt a far superior means of air travel, except, of course, there is a price tag to it. For those who value time, there are both tangible and intangible benefits. All one requires is money or one should be important enough to be flown in a private aircraft. And we see that in India that this breed is growing by the day. SP

PHOTOGRAPH: CESSNA

UNPARALLELED OPPORTUNITY

As the most important business aviation event of the year, NBAA 2015 offers attendees an unmatched platform to learn about the latest issues affecting the industry and innovations such as unmanned aircraft systems (UAS)

BY R. CHANDRAKANTH

IT IS RANKED AS the fifth largest trade show in the United States. The National Business Aviation Association's (NBAA) Business Aviation Convention and Exhibition, attracts over 25,000 key aviation professionals from around the world, including current and prospective aircraft owners, manufacturers and customers into one meeting place. This year the 'must-attend' event will be held from November 17 to 19 in Las Vegas, Nevada. And it is getting bigger and bigger. The NBAA 2015 will feature over 1,100 exhibitions displayed across one million square feet of floor space and two static displays of aircraft.

As the most important business aviation event of the year, NBAA 2015 offers attendees an unparalleled opportunity to learn about the latest issues affecting the industry. And as the largest gathering of the industry in the world, NBAA 2015 is the best place to review the latest business aviation products, technologies and services, while participating in dozens of education sessions and making side-by-side comparisons of the innovative aircraft on static display.

The event gets a number of industry sponsors such as Air BP; Airbus; Air Cost Control; Bombardier; CAE; Cutter; Embraer Executive Jets; Epic; Global Parts Aero; Global Capital; Jeppesen; Jetex; Kaiser Air; Landmark Aviation; Philips; Pratt & Whitney, Canada; Satcom Direct; Shell Aviation; Smartsky Networks; Swiss Re Solutions; TAC Air; Textron; True Blue Power; UAS International Trip Support; Universal Avionics; Universal Weather and Aviation; Wheels Up; and World Fuel Services.

Founded in 1947 and based in Washington DC, the NBAA is the leading organisation for companies that rely on general aviation aircraft to help make their businesses more efficient, productive and successful. The Association represents over 10,000 companies and provides more than 100 products and services to the business aviation community.

PHOTOGRAPHS: NBAA, AMAZON

FEATURED SPEAKERS

One of the best parts of the convention will be the speeches by the featured speakers who come from varied walks of life. Award-winning singer and songwriter Dierks Bentley, a licensed pilot who values business aircraft and utilises business aviation, will be a featured speaker during the Opening General Session.

Bentley will discuss how his Cirrus SR22T Xi aircraft has helped him in his performing career. The country music star has crisscrossed the country countless times while on tour, and has said that flying his own plane, instead of riding a tour bus, optimises the efficiency of his travel.

"Dierks Bentley has first-hand knowledge of the utility of business aircraft," said NBAA President and CEO Ed Bolen. "We look forward to having this talented musician and pilot at NBAA 2015, to detail how the use of an airplane for business has applied to his music career."

Since 2003, the vocalist and guitarist has recorded eight albums and garnered 13 number-one songs. Bentley has received 11 Grammy nominations and earned official membership in the Grand Ole Opry.

The other featured speaker is the Oklahoma Governor Mary Fallin. In 2004, Fallin was honoured with the Oklahoma Aviation and Space Hall of Fame's Clarence E. Page Memorial Trophy for her work in establishing the Oklahoma Task Force on Aviation, which is dedicated to strengthening the state's aerospace companies and attracting new aviation businesses to the Sooner State.

After serving as Lieutenant Governor for 12 years, Fallin served two terms in the US House of Representatives from 2007 to 2011, and was a member of the House Committee on Transportation & Infrastructure, and it's Aviation Subcommittee. She has a few hours remaining to complete the requirements for obtaining her private pilot's licence, and is a member of the Oklahoma Pilots Association.

Attendees will be looking forward to the address by the Federal Aviation Administration (FAA) Administrator Michael Huerta. "NBAA is honoured to have Administrator Huerta as a speaker at our convention," said Ed Bolen. "As Washington policymakers are debating important issues related to the FAA – from the implementation of NextGen to the future structure of the agency itself – Administrator Huerta's insights will certainly be of interest to our attendees."

Huerta was confirmed as FAA Administrator in January 2013 and is responsible for the largest aviation system in the world. He oversees the agency's 47,000 employees and its NextGen air traffic control modernisation programme, which will transform air traffic control (ATC) from a ground-based system to one based on satellite navigation.

UAS TECHNOLOGY - NEW OPPORTUNITIES

At the upcoming event, seminars will address the rapid maturation of 'detect and avoid' UAS technology, and existing and potential uses of s-UAS in business aviation.

Approximately 30 representatives from the UAS and manned aircraft industries, the federal government and other aviation stakeholders will work on the task force.

Bolen expressed his support for an announcement by the Department of Transportation (DOT) and Federal Aviation Administration (FAA) of a new joint industry-government task force created to develop a process for registering unmanned aircraft systems (UAS).

DOT Secretary Anthony Foxx said the task force – composed of 25 to 30 representatives from the UAS and manned aviation industries, the federal government and other aviation stakeholders – is expected to issue its proposal by November 20, with the intent of launching the registration programme in time for the US holiday season, during which the agency expects several thousand UAS to be given as gifts to new recreational users.

"The UAS industry has long been identified as an important and emerging one, as demonstrated by the introduction, development and use of UAS, all of which have grown exponentially in recent years," Bolen noted. "That said, it appears the FAA's framework for ensuring their safe introduction into the nation's air transportation system needs to be quickly developed and refined.

"Today was a good day in that regard, because the DOT and FAA have come together with industry stakeholders in recognition of this need, and to begin the process for putting this framework in place," Bolen continued. "While we don't yet know the full details of what will be developed, we support the FAA's intensified focus in this area. We are also investigating how NBAA can best support this activity, and we will do all we can to help ensure this collaborative process will result in the development of a needed framework for UAS."

NBAA on board. NBAA has accepted the invitation to be among the participating organisations on the recently announced UAS Registration Task Force Aviation Rulemaking Committee (ARC), which will determine regulations governing the registration of private and recreationally operated UAS. Sarah Wolf, NBAA Senior Manager of Security and Facilitation, will represent the business aviation community on the task force.

NBAA has long maintained that it is imperative that any introduction plan for UAS be focused on safety. This means UAS should not share the same airspace with manned aircraft until they have equivalent certification and airworthiness standards as manned aircraft, including the ability to take timely directions from air traffic control, and to sense and avoid manned aircraft and other UAS.

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UAS offers great promise. While UAS offer great promise for a variety of applications – including opportunities within the business aviation community – NBAA has long maintained that safety must be the top priority for any plan to introduce UAS into the national airspace system (NAS). This includes assurances that unmanned aircraft meet equivalent certification, airworthiness and traffic avoidance standards as manned aircraft.

NBAA has been actively involved in the introduction process, including participation by association personnel in UAS working groups through RTCA since 2006. Last month, NBAA also welcomed the FAA's selection of two respected aviation professionals to lead the agency's UAS Integration Office and spearhead efforts to safely introduce UAS into the nation's airspace. SP

CASE FOR DIFFERENTIAL PRICING FOR REGIONAL AVIATION

There are more than 400 airports of which about 90 are operational hence there exists a possibility of a structure of mixed airport charges to boost regional and general aviation services

BY R. CHANDRAKANTH

ILLUSTRATION: ANOOP KAMATH

THE NARENDRA MODI-LED GOVERNMENT has been talking for quite some time that it would give regional air connectivity a major push. The Minister of Civil Aviation, P. Ashok Gajapathi Raju, on numerous occasions has indicated that the government is serious in promoting regional aviation, first to capitalise on the pan-India economic momentum and two to connect un-served and under-served markets.

Such an effort would mean that the government has to think differently with regard to its civil aviation policy, if it really intends to tap the potential of 300 million middle class citizens living in Tier-II and Tier-III cities. While there are several aspects on how to promote regional aviation, one that is very much under its purview is airport charges wherein it can have a differential pricing for regional airlines, even though

there have been murmurs of dissent from major airliners and also private airports.

NO DIRECT SUBSIDIES

Though there is differential pricing from airport to airport, there is no such differentiation when it comes to full service airlines, low-cost airlines, regional airlines and general aviation. There are no direct subsidies as such for regional airlines. In the light of this, the other alternative is to develop budget airports for regional airlines and low-cost carriers (LCCs) but that model has not been tried out in India.

65 PER CENT TRAFFIC FROM SIX AIRPORTS

There are more than 400 airports of which about 90 are operational hence there exists a possibility of a structure of mixed airport charges to boost regional and general aviation services. Presently, about 65 per cent of India's air traffic is accounted for by six metros (Delhi, Mumbai, Bengaluru, Hyderabad, Chennai and Kolkata). But it is observed that the smaller towns are going to come in to play soon as there is considerable economic traction happening across the hinterland.

The Airports Authority of India (AAI) is developing about 50 no-frills airports and in the first five are Teju in Arunachal Pradesh, Jharsuguda in Odisha, Hubli and Belgaum in Karnataka and Kishangarh in Rajasthan. In the absence of direct subsidies, no-frills airports do make business sense for regional and general aviation players.

TWO HEADS FOR CHARGES

The AAI is the authority to levy charges which have been broadly classified under two heads — Air Navigation Services (ANS) and Airport Services. The airports under the AAI have been classified as 'Major Airports' and 'Non-Major Airports' and the tariff for aeronautical services at major airports is fixed and regulated by Airports Economic Regulatory Authority of India (AERA) and for all other airports the Ministry of Civil Aviation functions as regulator also.

The major airports under AAI are Chennai, Kolkata, Pune, Trivandrum, Jaipur, Goa, Lucknow, Guwahati, Calicut, Ahmedabad and Srinagar. The tariff structure of aeronautical services (other than ANS) at major airports is airport specific. Tariffs for aeronautical services (airport services) pertaining to first control period (financial year 2011-12 to 2015-16) have been approved by AERA in respect of Chennai, Kolkata, Guwahati and Lucknow airports.

NON-MAJOR AIRPORTS

In respect of the non-major airports the existing tariff for airport services as applicable to domestic airports will continue to be applied though some of them are declared as international airports.

It must be mentioned here that the landing charges at some of the AAI airports are higher than the charges of private airport operators.

A case is being made out that regional airline operators should be incentivised by lower airport charges as they connect under-served or un-served destinations where traffic needs to be created through various promotional schemes. The regional airline operators who operate turboprop and jets with seating capacity up to 130 would stand to benefit if such direct subsidy is provided, but there is no such thinking on the part of the government. The airport charges (for landing, parking and housing) at the Chhatrapati Shivaji International Airport (CSIA) in Mumbai are lower than those charged by the AAI at Kolkata and Chennai. Presently, the AAI has listed out charges for airports and in this article we have included charges of both AAI-run airports and those run by private operators for reference.

NETAJI SUBHASH CHANDRA BOSE INTERNATIONAL AIRPORT, KOLKATA.

Landing Charges Per Single Landing (effective April 1, 2015)		
Weight of aircraft	**Rate per landing (international flights)**	**Rate per landing (other than international flights)**
Up to 100 MT	₹650.40 per MT	₹331.30 per MT
Above 100 MT	₹65,040 + ₹874 per MT in excess of 100 MT	₹33,130 + ₹445.10 per MT in excess of 100 MT
Housing and Parking Charges		
Weight of aircraft	**Parking charges Rate per MT per hour**	**Housing charges Rate per MT per hour**
Up to 100 MT	₹9 per MT	₹17.60 per MT
Above 100 MT	₹900 + ₹11.80 per MT per hour in excess of 100 MT	₹1,760 + ₹23.60 per MT per hour in excess of 100 MT

Source: Airports Authority of India

The AAI charges a minimum fee of ₹5,000 per single landing for all types of aircraft/helicopter flights, including but not limited to domestic landing, international landing and general aviation landing, however this will not apply to training flights operated by the flying clubs.

The AAI does not levy any parking fees for the first two hours. It said that while calculating free parking period, standard time of 15 minutes shall be added on account of time taken between touchdown time and actual parking time on the parking stand. Another standard time of 15 minutes shall be added on account of taxiing time of aircraft from parking stand to take off point. These periods shall be applicable for each aircraft irrespective of the actual time taken in the movement of aircraft after landing and before take-off.

CHENNAI INTERNATIONAL AIRPORT

Landing Charges Per Single Landing (effective April 1, 2015)		
Weight of aircraft	**Rate per international landing per MT**	**Rate per landing (other than international) per MT**
Up to 100 MT	₹650.40 per MT	₹331.20 per MT
Above 100 MT	₹65,040 + ₹874 per MT in excess of 100 MT	₹33,120 + ₹445.10 per MT in excess of 100 MT
Housing and Parking Charges		
Weight of aircraft	**Parking charges Rate per MT per hour**	**Housing charges Rate per MT per hour**
Up to 100 MT	₹8.90 per MT	₹17.70 per MT
Above 100 MT	₹890 + ₹11.80 per MT per hour in excess of 100 MT	₹1,770 + ₹23.50 per MT per hour in excess of 100 MT

GUWAHATI INTERNATIONAL AIRPORT

Domestic/ International Landing Charges Per Single Landing	
Weight of aircraft	**Rates per landing**
Up to 20 MT	₹202.20 per MT
20 MT to 50 MT	₹4,044 + ₹320.20 per MT in excess of 20 MT
50 MT to 100 MT	₹13,650 + ₹328.10 per MT in excess of 50 MT
Above 100 MT	₹30,055 + ₹438.20 per MT in excess of 100 MT

Housing and Parking Charges		
Weight of aircraft	**Parking charges Rate per MT per hour**	**Housing charges Rate per MT per hour**
Up to 40 MT	₹4.80 per hour per MT	₹9.40 per hour per MT
40 MT to 100 MT	₹192 + ₹9 per hour per MT in excess of 40 MT	₹376 + ₹17.50 per hour per MT in excess of 40 MT
Above 100 MT	₹732 + ₹11.70 per MT per hour in excess of 100 MT	₹1,426 + ₹22.50 per MT per hour in excess of 100 MT

In order to encourage air connectivity to the North-eastern region and to promote intra-regional connectivity the AAI has waived off landing charges for (a) aircraft with a maximum certified capacity of less than 80 seats, being operated by domestic scheduled operators (b) helicopters of all types.

The Airports Authority also has waived off the night parking charges for all domestic scheduled operators at those airports where the state government levies the rate of tax (VAT) on aviation turbine fuel up to 5 per cent. The above waiver of night parking charges (between 2200 to 0600 hours) will be made applicable from the date of implementation of the levy of tax on ATF up to 5 per cent by the respective state governments. This relief shall be applicable initially for a period of five years and will be reviewed thereafter. In the event of upward revision in the tax rate of ATF by the respective state governments the relief of free night parking charges will also be deemed to be withdrawn for all the airports within the jurisdiction of the said state(s).

CHARGES AT NON-MAJOR AIRPORTS

Landing Charges Per Single Landing (International Flights)	
Weight of aircraft	**Charges**
Up to 10,000 kg	₹122.10 per 1,000 kg
10,001 to 20,000 kg	₹1,221 + ₹179.30 per 1,000 kg in excess of 10,000 kg
20,001 to 50,000 kg	₹3,014 + ₹354.20 per 1,000 kg in excess of 20,000 kg
50,001 to 1,00,000 kg	₹13,640 + ₹413.60 per 1,000 kg in excess of 50,000 kg
Above 1,00,000 kg	₹34,320 + ₹471.90 per 1,000 kg in excess of 1,00,000 kg

Landing Charges Per Single Landing (Domestic Flights)	
Weight of aircraft	**Charges**
Up to 10,000 kg	₹67.10 per 1,000 kg
10,001 to 20,000 kg	₹671 + ₹117.70 per 1,000 per kg in excess of 10,000 kg
Above 20,000 kg	₹1,848 + ₹231 per 1,000 kg in excess of 20,000 kg

The AAI has stated that all landing and parking charges at all airports in the North-eastern region, Jammu & Kashmir, Andaman and Nicobar Islands and Lakshadweep (other than defence airports) is reduced by 25 per cent of the current rates. All the charges mentioned above do carry applicable service tax.

PRIVATE AIRPORTS —

CHHATRAPATI SHIVAJI INTERNATIONAL AIRPORT, MUMBAI

Landing Fees Per Single Landing		
Weight of aircraft	**Rate per landing for international aircraft**	**Rate per landing for domestic aircraft**
Up to 100 MT	₹594.01 per MT	₹283.55 per MT
Above 100 MT	₹59,401 + ₹725.71 per MT in excess of 100 MT	₹28,355 + ₹381 per MT in excess of 100 MT

Housing and Parking Charges		
Weight of aircraft	**Parking charges Rate per MT per hour**	**Housing charges Rate per MT per hour**
Up to 100 MT	14.26 per MT	28.52 per MT
Above 100 MT	₹1,426 per MT + ₹18.88 in excess of 100 MT	₹28,522 per MT + ₹37.77 per MT in excess of 100 MT

A minimum fee of ₹16,170 and ₹21,560 is charged per single domestic and international landing respectively for all types of aircraft/helicopter, including but not limited to domestic landing, international landing and general aviation landing.

PRICING IN TERMS OF WEIGHT

As we notice that the airport charges are made out based on the weight of the aircraft and not as per the classification of full service airline; low-cost carrier; regional airline or general aviation.

OPPOSITION TO REGIONAL CONNECTIVITY POLICY

The Association of Private Airport Operators (APAO) has opposed the regional connectivity policy stating that the destinations included in the proposal lacked traffic potential and the incentives offered to airlines to launch services were not enough to cover their costs. Similarly airlines had opposed stating that the new destinations would have severe financial implications.

The APAO comprises GVK, GMR groups and CIAL run airports at Mumbai, Bengaluru, Delhi, Hyderabad and Kochi. The APAO said that 10 of 87 destinations listed in the proposal have traffic of 70 or more passengers each day to/from Delhi, while the rest "do not have the ability to support or augment scheduled carriers' service network". The Civil Aviation Ministry's proposal says airlines should deploy at least six per cent of the capacity deployed on trunk routes to 'incentive destinations' and also on routes within Jammu & Kashmir. In turn, the airlines will be exempt from landing and parking charges, route navigation charges, passenger service fee and fuel throughput charge levied by the Airports Authority of India.

According to the airports' body, these concessions alone would not be sufficient to incentivise airlines as these don't even constitute 10 per cent of an airline's operating cost. In order to break even on these routes, the airlines would require 75 per cent occupancy.

The regional airline operators, presently three in number—Air Costa, Air Pegasus and Turbo Megha Airways (Trujet)—have not grouped themselves to pressure the government as they themselves are in the early stages of their journey. It remains to be seen how the Ministry intends to give regional aviation a boost, other than clearing air operators' certificate for them at the earliest. SP

E-JETS OPERATORS AT FINAL ASSEMBLY OF THE FIRST E2

The E-Jets E2 programme reinforces Embraer's commitment to continuously invest in the commercial jets line of the company, and maintain market leadership in the segment of 70-130 seats, in which the E-Jets hold over 50 per cent market share in orders and 60 per cent in deliveries

BY R. CHANDRAKANTH

EMBRAER COMMERCIAL AVIATION BROUGHT together more than 50 airlines and leasing companies, and 40 suppliers and trading partners in the city of Campinas, a major city in the state of São Paulo, Brazil, between October 19 and 21, for the 2015 global edition of the Embraer Operators Conference (EOC). The highlight of the event took place on October 20, when EOC participants flew to Embraer headquarters, in São José dos Campos, and visited the first prototype of the E-Jets E2, an E190-E2 model. The plane is now entering the final assembly process and EOC guests, about 400 people, were able to see firsthand the fuselage painted, and the wings already installed.

The first delivery of an E-Jet E2 (an E190-E2) is scheduled for the first half of 2018. The E195-E2 is scheduled to enter service in 2019 and the E175-E2 in 2020. The E-Jets E2 programme reinforces Embraer's commitment to continuously invest in the commercial jets line of the company, and maintain market leadership in the segment of 70-130 seats, in which the E-Jets hold over 50 per cent market share in orders and 60 per cent in deliveries. Currently, the E-Jets operate with 70 airlines in some 50 countries.

MILESTONES OF E2

January 8, 2013: Pratt & Whitney's PurePower Geared TurbofanTM engines selected for Embraer's second-generation of E-Jets.

February 4, 2013: Embraer selects Honeywell to provide its Primus Epic 2 integrated avionics system for the second-generation of E-Jets.

June 17, 2013: At Paris International Air Show at Le Bourget, Embraer officialy launches the new, three-aircraft programme at a press conference, led by Embraer CEO Fred Curado and Paulo Cesar Silva, the President of the Commercial Aviation division. The company revealed the name of the next-generation aircraft, E-Jets E2, and logged a sizeable number of orders from both airlines and leasing companies.

July 14, 2014: A completely redesigned cabin with unprecedented space and an innovative premium seating layout is on display at the Farnborough Air Show. UK design firm Priestmangoode contracted to develop the interior jointly with Embraer. The new E2 cabin keeps the trademark two-by-two, 18.3-inch-wide seats in economy class. The slim seats, which have no under seat support rails, give passengers more space to stow their cabin baggage or stretch out. New overhead bins are about 40 per cent larger compared to current-generation E-Jets. Space is so generous that each passenger on the aircraft can stow his/her own standard-size carry-on bag in the bins.

One of the signature design features of the E2 is an individual PSU (passenger service unit). Inspired by the automotive industry, each passenger has his/her own light and air vent that is positioned directly above the seat. Windows have been redesigned, too, to make the cabin feel larger and brighter.

The E2 cabin has options for Wi-Fi Internet connectivity and individual screens for in-flight entertainment.

Another innovation featured in the cabin mock-up is a unique welcome screen at the boarding entrance. The LED panel can display flight information, destination weather, marketing messages or whatever the airline chooses.

July 14, 2014: Embraer's E-Jets E2 order book is growing again with a conditional order announced at the 2014 Farnborough Air Show for up to 100 E175-E2s from Trans States

PHOTOGRAPHS: EMBRAER

Holdings of St. Louis, United States. The agreement calls for 50 firm aircraft and options for an additional 50 jets. Deliveries for Trans States' 76-seat, dual class E175-E2s are scheduled to start in June 2020.

July 15, 2014: Brazil's Azul Linhas Aéreas, which operates 82 E190s and E195s (with eleven more on order), has the largest fleet of E195s in the world. With a Letter of Intent for up to 50 new E195-E2s announced at the Farnborough Air Show, Azul is poised to grow again. The LOI also makes Azul the launch customer for the E195-E2.

With its predominantly E-Jet fleet, the carrier has focused on serving secondary markets with high-frequency, non-stop flights that have brought affordable air travel to consumers, many of whom have never flown before.

July 17, 2014: ICBC Financial Leasing Co Ltd., a wholly-owned subsidiary of the Industrial and Commercial Bank of China, is adding up to 20 E190-E2s to its current asset portfolio of over 380 owned and managed aircraft. ICBC Leasing joins AerCap of the United States as a lessor of E-Jets E2s. In 2013, AerCap announced the acquisition of up to 50 E190-E2s and up to 50 E195-E2s. The leasing community has been a strong supporter of Embraer E-Jets. Some 30 leasing companies have added E-Jets to their fleet portfolios.

Tianjin Airlines, a subsidiary of the HNA Group, is adding to its existing fleet of 50 E-Jets. The parent company announced the acquisition of an additional 20 current generation E-Jets, the first of which will be delivered in 2015, and 20 next-generation E2s.

October 17, 2014: First metal cut for the E2 happens at Evora, Portugal.

April 15, 2015: E2 Interior wins award. The concept for the E-Jets E2 cabin interior receives the prestigious Crystal Cabin Award in the 'Industrial Design and Visionary Concepts' category at the annual Aircraft Interiors Expo in Hamburg by the Crystal Cabin Award Association in recognition of outstanding innovation in the field of aircraft cabins. SP

"IT'S ALWAYS GOOD TO HAVE THE OPPORTUNITY TO SHOW CUSTOMERS THAT THE PROGRAMME IS ON SCHEDULE. TODAY'S E-JETS OPERATORS ARE POTENTIAL E2 OPERATORS, AND THIS IS WHY IT IS SO IMPORTANT TO KEEP THEM UPDATED ON THE PROGRAMME. SEEING THE PLANE UP CLOSE SHOWS THAT OUR PROMISE IS MAKING STRIDES TO BECOME A REALITY, AND THAT WE ARE QUICKLY MOVING TOWARDS THE NEXT STEPS: THE ROLL OUT AND THE FIRST FLIGHT."

— PAULO CESAR SILVA, PRESIDENT & CEO, EMBRAER COMMERCIAL AVIATION

LIST OF E-JETS OPERATORS

CENTRAL AMERICA
Copa Airlines, Panama

NORTH AMERICA
United Express, USA
Delta Connection, USA
US Airways & US Airways Express, USA
JetBlue Airways, USA
AeroMexico Connect, Mexico
American Eagle, USA
Air Canada

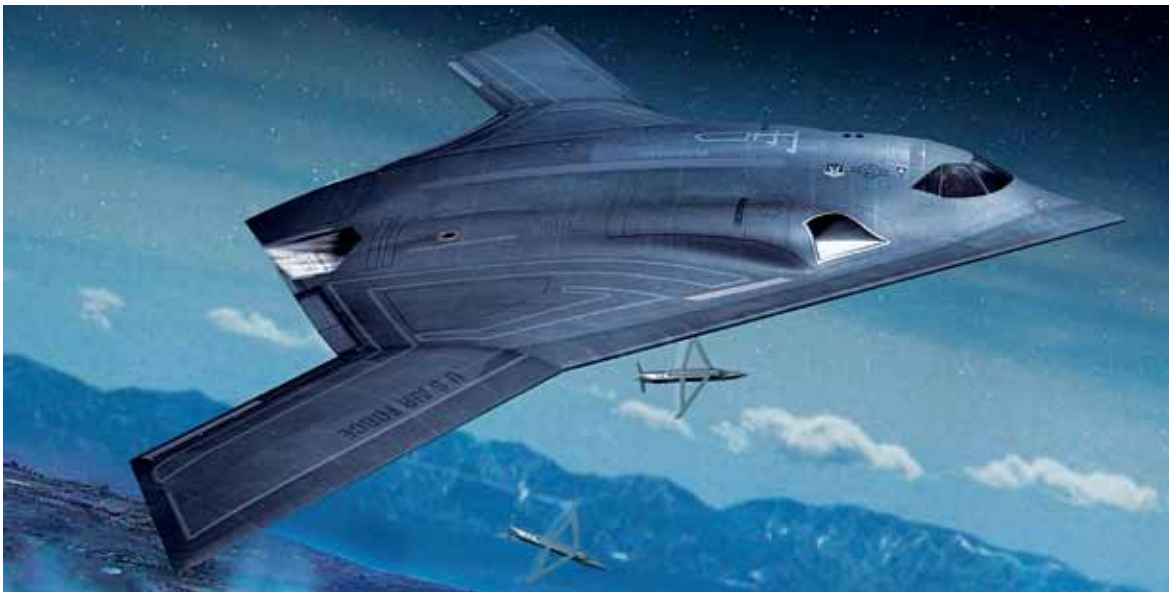
SOUTH AMERICA
TAME, Ecuador
Satena, Colombia
Azul, Brazil
Austral, Argentina
Conviasa, Venezuela
Avianca, Colombia
SATENA, Colombia

AFRICA & MIDDLE EAST
Saudi Arabian
Royal Jordanian
Oman Air
EgyptAir Express
Kenya Airways
Arkia Airlines, Israel
LAM, Mozambique
Borajet, Turkey
Royal Air Maroc
Punto Azul, Equatorial Guinea
Mauritania Airlines, Mauritania
Air Burkina, Burkina Faso

ASIA
Mandarin Airlines, Taiwan
Tianjin Airlines, China
J-AIR, Japan
Fuji Dream Airlines, Japan
China Southern, China
Hebei Airlines, China
Myanma Airways, Myanmar
Air Astana, Kazakhstan
Air Costa, India
GX Airlines, China
Kalstar Aviation, Indonesia
Colorful Guizhou Airlines, China

OCEANIA
Airnorth, Australia
Virgin Australia
Cobham Aviation Services/
National Jet, Australia

EUROPE
LOT Polish Airlines, Poland
Alitalia, Italy
Finnair, Finland
Flybe, UK
HOP!, France
Montenegro Airlines, Montenegro
KLM Cityhopper, Netherlands
Air Dolomiti, Italy
Air Europa, Spain
British Airways CityFlyer, UK
Lufthansa CityLine, Germany
Air Moldova, Moldova
People's Vienna Line, Austria
Estonian Air, Estonia
Bulgaria Air, Bulgaria
Belavia, Belarus
Jetairfly, Belgium
Ukraine International, Ukraine
Azerbaijan Airlines, Azerbaijan
Aurigny Air Services, Channel Islands
Saratov Airlines, Russia
Austrian Airlines
AnadoluJet, Turkey
Helvetic Airways, Switzerland



MASSIVE VICTORY FOR NORTHROP

With the award of the $80 billion contract for the LRSB, Northrop Grumman, believed to have been on the verge of a break-up, will now be able to avoid being taken over by one of the US aerospace majors and can now look forward to a bright future

BY AIR MARSHAL B.K. PANDEY (RETD)

PHOTOGRAPH: NORTHROP GRUMMAN

ON OCTOBER 27 THIS year, the Pentagon awarded a contract to the US aerospace major Northrop Grumman to build the new Long Range Strike Bomber (LRSB). A massive victory and historical milestone in aerospace and defence sector. The fleet of aircraft of this class currently operational with the United States Air Force (USAF) consists of three types of platforms. The oldest is the B-52 Stratofortress that was built by Boeing and has been in service with the USAF since the 1950s. Later to be inducted in the early 1980s was the B-1 designed and developed by Rockwell and soon replaced by an improved version, the B-1B which entered service in 1986 with the Strategic Air Command of the USAF as a nuclear capable platform. However, it is understood that the B-1B is no longer certified to have the capability of delivering nuclear weapons. The parent company Rockwell that built the B-1B bomber was ultimately taken over by Boeing. The third and the latest bomber aircraft to be inducted has been the Northrop B-2 Spirit, also known as the Stealth Bomber. This platform has been built by Northrop which became Northrop Grumman after merger with Grumman Aerospace Corporation in 1994.

The production of this aircraft was scaled down from 132 to 21 and today, a total of 20 B-2 Spirit bombers remain in service with the USAF. Although the B-2 fleet has been operational in the USAF for more than two decades, it still has considerable service life left and is expected to continue in service till at least 2058 with possibly major midlife upgrade. Other than the 20 B-2 Spirit bombers, the two other fleet of the B-52 and the B-1B, have far outlived their

expected service life and have been overtaken by obsolescence. Also, as their technology is outdated, these two fleets are afflicted by age-related issues. Thus, these two fleet of long-range strike aircraft do require replacement if the USAF is to maintain its supremacy in global conventional as well as nuclear strike capability.

The USAF needs to always possess such a strategic reach not only to target any part of the world as dictated by the compulsions of national security but also to wield an effective deterrent capability. Induction of the next-generation bomber aircraft is therefore an urgent requirement of the USAF and would be a strategic investment for national security for decades to come. Quite understandably, this project figures on the top of their list of priorities for re-equipment.

THE INDUSTRY IN A STATE OF FLUX

While there has been considerable excitement and optimism generated over the decision by the Pentagon to award the contract for the next-generation LRSB, developments during the last few years in the regime of fighter aircraft production by the US aerospace industry have not been as inspiring. The F-22 Raptor air superiority fighter aircraft programme of Lockheed Martin which was and continues to be a platform unmatched by any other in the world even today, was closed down somewhat prematurely in 2012 seven years after the first aircraft was inducted into the USAF. As against a requirement of 750 aircraft projected initially by the Pentagon, a total of only 187 were finally produced with the last aircraft being delivered to the USAF in 2012.

Apart from the perpetually escalating cost of the programme that has made the platform unaffordable even for the US Government, there was heated debate on the lack of clarity on the adversary or adversaries for whom this platform had been conceived. Robert Gates, the then US Secretary of Defense, espoused the change in strategic thinking at the Pentagon wherein the F-22 Raptor was seen as having been designed to fight wars of the 20th century between the superpowers and was not considered to be relevant to the type of conflicts in which the US was likely to be involved in the future.

Opinion in the US political and military leadership was clearly in favour of the more versatile and then thought to be less expensive option – the F-35 Lightening II, Joint Strike Fighter programme launched by Lockheed Martin. Unfortunately, the F-35 programme has been plagued with problems including serious technical glitches at every stage, missed timelines and heavy cost escalation, all casting serious doubts about its reliability and successful attainment of full operational status as was mandated in the initial plan for the design. However, despite the problems, development of three versions of the F-35 for the USAF, the US Navy and the US Marine Corps, continues. But the project has acquired the dubious distinction of being the most expensive fighter aircraft acquisition programme of the US armed forces.

The higher echelons in the leadership of the nation, especially in the domain of defence, were also of the view that air combat was a relic of the past and that the F-22 Raptor was an overkill as in the future, the possibility of full scale wars was remote. Instead, in the future, wars would be fought against small groups of guerrillas, the type of war currently going on in the Afghanistan-Pakistan region for which unmanned combat aerial vehicles (UCAVs) would be the platform of choice. In conformity with this philosophy, the USAF is expanding its fleet of unmanned platforms rapidly and every year, training more operators of unmanned aerial vehicles (UAVs) than fighter pilots. In fact, in 2009, there was wide consensus in the Pentagon that in all likelihood, the F-35 would be last manned fighter aircraft that the USAF would get. This philosophy, however, does not as yet seem to have pervaded the regime of manned long-range strike aircraft as so far, there has been no indication that the LRSB would be an unmanned platform.

IMPLICATIONS FOR THE US AEROSPACE INDUSTRY

Boeing and Lockheed Martin have been the two leading aerospace companies in the US with Northrop Grumman, often regarded as the 'underdog', placed in the third slot. To respond to the LRSB tender, Boeing and Lockheed Martin had teamed up to submit a joint bid. However, given the fact that Northrop Grumman had built the B-2 Spirit Bomber for the USAF and the fleet is expected to continue to be in service with the USAF for several decades more, award of the $80 billion contract to develop the fifth-generation LRSB which could possibly be named as the B-3, does not militate against logic. The manufacturer of the power plant is yet to be disclosed.

While this contract has definitely come as a bonanza for Northrop Grumman, it will also have a profound impact on the US aerospace industry which might witness some more acquisitions and mergers as was the case of Lockheed Martin's acquisition of Sikorsky. In the face of declining contracts for defence equipment, the competition is becoming far more intense in the aerospace and defence industry in the US. Owing to the absence of large-scale new orders that the wars, including the Cold War, had generated, there is a now degree of distress in the industry as it has been facing an uncertain future.

However, with the award of the new multibillion-dollar contract for the LRSB, Northrop Grumman, believed to have been on the verge of a break up, will now be able to avoid being taken over by one of the US aerospace majors and can now look forward to a bright future. As for its rivals, Lockheed Martin would be involved with the F-35 programme for which the order from the three services i.e. the USAF, the US Navy and the US Marine Corps, taken together is indeed very large. For Boeing, contracts for the production of fighter aircraft are fast approaching completion and partial good times for the company can be expected only if orders for the F/A-18E/F Super Hornet continue to flow in.

In any case, as things stand, on account of lack of new orders, Boeing is not likely to maintain its combat aircraft manufacturing capacity beyond the end of this decade unless new programmes are initiated by the Pentagon, which at this point in time appears somewhat unlikely. The one possibility that is latent in the demand for the development and production of a next-generation fighter trainer for the USAF which would be required in sufficiently large numbers.

CONCLUSION

The fifth-generation bomber contracted to be designed, developed and built by Northrop Grumman, will be the main pillar of strength that will help the USAF play its role in the execution of US national defence strategy. It will give the USAF unprecedented capability of conventional as well as nuclear strike to neutralise targets in any part of the world. The threat to national security of the US is expected to emanate primarily from China and possibly Russia. However, there are two imponderables that Pentagon must address. The first that lies in the domain of finances pertains to cost escalation that may drive the project beyond the limits of affordability as witnessed in the F-22 and the F-35 projects. The second pertains to the issue of survivability in a highly intense air defence environment that the prospective adversaries are likely to develop in their own national security interests in the future. SP

IMPORTANCE OF LIFE-CYCLE COST

In view of limited financial resources and consequently low budgetary allocations for defence, it would be necessary to factor in life-cycle cost in the selection of defence equipment

THE EXPRESSION 'LIFE-CYCLE Cost' related to military hardware, whether a tank, warship or aircraft, pertains to the total cost of initial acquisition of the equipment, expenditure on maintenance for it to remain fit for operational deployment and the cost of operating the equipment over its entire life as defined by the original equipment manufacturer (OEM). This concept would apply also to all other military systems including software-based equipment such as command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) systems. In other words, life-cycle cost refers to the cost of particular military equipment and the supporting elements over their entire life from 'cradle to grave'.

The methodology of computing the total cost of ownership of defence equipment acquired through either development within the country or through imports, was originally evolved in the early 1960s by the US Department of Defense. It has since then been adopted by various countries, such as the United Kingdom, Australia and more recently by India as well. Also, with the ever tightening control on defence expenditure and shrinking defence budgets of nations across the world, reduction of life-cycle cost has become an inalienable imperative. Ways and means of reducing life-cycle cost has been an area of ever-increasing focus of global aerospace majors to remain competitive and also by the user nations to remain within the bounds of financial affordability.

FINALISATION OF CONTRACT FOR AIRBUS A330 MRTT SELECTED FOR THE IAF LONG AGO IS DELAYED POSSIBLY DUE TO LACK OF UNDERSTANDING OF 'LIFE-CYCLE COST'

When a nation procures defence equipment in sizeable numbers, it may be advantageous for the buyer nation to also set up the facilities to assemble or manufacture in-house a major portion of the total number of units contracted for, acquire the latest technologies through transfer of technology, obtain the necessary documentation and have adequate number of personnel trained to respectable proficiency levels. For example, in the tender for the 126 Rafale combat jets for the Indian Air Force (IAF) from Dassault, the OEM was required to supply 18 aircraft directly in flyaway condition. The remaining 108 platforms were to be manufactured in India in collaboration with an Indian partner. Apart from the fact that this arrangement would have contributed to reduction in the unit cost of the equipment, the manufacturing facilities established in the process would have later undertaken manufacture of spares and would have provided maintenance support for the fleet throughout its service with the IAF as well as would have undertaken midlife upgrade thus reducing life-cycle cost significantly. Unfortunately, this particular tender proved abortive.

However, there is similar arrangement with the on-going contract with Sukhoi of Russia in case of the Su-30MKI fleet of 272 aircraft of which only 40 have been received directly from the OEM in flyaway condition and the remaining are being manufactured under licence by the Indian aerospace major the Hindustan Aeronautics Limited. The offer from Airbus-Tata Advanced Systems Limited consortium to supply 56, C-295 medium-lift military transport aircraft to replace the ageing fleet of Avro aircraft in the IAF is also formulated on similar lines with 16 aircraft supplied directly from the Airbus factory in Seville, Spain, and 40 platforms to be manufactured within the country at a facility yet to be set up.

As is generally the case, the initial cost of acquisition of military assets is high. One of the reasons for this is the relatively lower volumes of production when compared with non-military hardware. The total quantities produced are low primarily because the demand is low and there are a number of impediments, political or otherwise, in promoting global trade of military equipment. Besides, the cost of operating and maintaining military equipment over its complete life-cycle which may extend up to 40 years or even more, is in fact much higher than the initial acquisition cost. This is one of the important factors that should and must be taken into account in the process of selection of the equipment. For example, the cost of operating the fifth-generation combat aircraft like the Lockheed Martin F-22 Raptor works out to $44,000 per hour. As against this, the cost of operating the fourth-generation combat aircraft Gripen from Saab of Sweden is only $3,000 per hour. The question for a nation scouting the global market for combat aircraft then boils down to whether it must go for the F-22 Raptor or make do with the Saab Gripen.

In the procurement of a military aircraft therefore the decision must not be based on the initial procurement cost alone. While the low price quoted for a particular piece of hardware may appear attractive, its life-cycle cost may turn out to be much higher than that of an equivalent platform where the significantly higher unit cost is more than compensated for by the much lower life-cycle cost. European and American military aircraft generally fall in the latter category, i.e high unit cost but much lower life-cycle cost.

The difference in the total operating cost over the complete life-cycle of the two aircraft would be important from the point of view of affordability and limitations of future budgetary support. In view of limited financial resources of the nation and consequently low budgetary allocations for defence, it would be necessary to factor in the life-cycle cost in the selection of defence equipment whether for import or domestic production. SP

—By Air Marshal B.K. Pandey (Retd)

PHOTOGRAPH: AIRBUS DEFENCE AND SPACE

NEWLY RAISED HAWK AJT AS SURYA KIRAN PERFORMING MANOEUVRES

IAF TURNS 83

On October 8, 2015, the IAF turned 83, an occasion that was celebrated with enthusiasm and pride in all its units and establishments across the nation

BY AIR MARSHAL B.K. PANDEY (RETD)

THE INDIAN AIR FORCE (IAF) was officially established with the prefix 'Royal' on October 8, 1932 in British India with the enactment of the Indian Air Force Act the same year. Nearly six months later, the RIAF commissioned No. 1 Squadron, its very first squadron, at Drigh Road, Karachi, now in Pakistan. On its inventory, No. 1 Squadron had just four Westland Wapiti IIA biplanes and was manned by six officers five of whom were pilots, and 19 airmen, all trained by the Royal Air Force of the United Kingdom. From its humble beginnings, over the last over eight decades, the IAF has grown to be the fourth largest air force in the world and today, it is a force to reckon with. On its inventory, the IAF now has over 1,400 aircraft and around 1,70,000 personnel. Since independence, the IAF has participated in the wars with Pakistan in 1965, 1971 and 1999 and has always risen to the occasion providing swift response for disaster relief during natural calamity in India or abroad. It has also successfully extricated Indian nationals and citizens of other nations trapped in conflict zones in different parts of the world.

PHOTOGRAPH: IAF

CELEBRATIONS ON AIR FORCE DAY

On October 8, 2015, the IAF turned 83, an occasion that was celebrated with enthusiasm and pride in all its units and establishments across the nation ranging from Kashmir to Kanyakumari. Such events help enhance amongst the general public awareness of and confidence in the capabilities of the IAF to meet with the challenges of national security. It also helps boost morale and elevate the spirits of servicemen themselves. The national hub centre of the 83rd anniversary celebrations of the IAF was Air Force Station Hindon, located on the outskirts of Delhi. The event was marked by a parade and an impressive display of aerial might of the IAF. The parade which had nearly 300 IAF personnel including women officers, was reviewed by the chief guest Air Chief Marshal Arup Raha, Chief of the Air Staff (CAS) and the Chairman Chiefs of Staff Committee who conferred awards to honour air warriors in recognition of their selfless service to the nation. No. 1 Air Force Band was in attendance.

Also gracing the occasion were General Dalbir Singh, Chief of the Army Staff, and Admiral R.K. Dhowan, Chief of Naval Staff. Adding unique flavour to the event was the legendary cricketing idol Sachin Tendulkar who has been conferred the honourary rank of Group Captain and was sporting the ceremonial uniform of the IAF. Incidentally, he is the first sportsperson in India to receive this honour!

THE IAF HAS REMAINED IN THE VANGUARD OF THE INDIAN SKIES SAFEGUARDING THE SOVEREIGNTY OF THE NATION ALL THROUGH ITS GLORIOUS HISTORY OF OVER EIGHT DECADES

FELICITATIONS FROM DIFFERENT QUARTERS

The IAF was felicitated on this occasion by both the President of India, Pranab Mukherjee, the Supreme Commander, and Prime Minister Narendra Modi. The message from the President which was infinitely inspiring, read: "I am happy to know that the IAF is celebrating its 83rd Anniversary on October 8, 2015. The IAF has remained in the vanguard of the Indian skies safeguarding the sovereignty of our nation all through its glorious history of over eight decades. Over the years, the IAF has evolved into a formidable force with new acquisitions and weapons of great precision. Today, the IAF is rated one of the best in the world and has acquired the capability of strategic reach and precision targeting. In today's world order, the role of IAF is not only limited to fighting a war but also rendering timely assistance during national crisis. On numerous occasions in the past, during natural disasters, IAF has been at the forefront providing timely succour and relief. The recent efforts of the IAF to airlift our countrymen from Yemen, rescuing people during flash floods in Srinagar and the assistance rendered to the people of Nepal during the aftermath of a massive earthquake is praiseworthy. It bears testimony to the IAF's glorious legacy of valour, courage and commitment. The nation remains indebted to the air warriors for their selflessness and sacrifice. I am confident that the ongoing process of modernisation will transform the IAF into an even more potent and strategic force and it will continue to serve the nation with dedication and commitment. On this occasion, I extend my warm greetings and felicitations to all IAF personnel, civilians and their families. I am proud of the achievements by the IAF over the years and wish it continued success in all its future endeavours".

The Prime Minister eulogised the IAF with his message which read, "I salute our air force personnel on Air Force Day. They have always served India with great courage and determination. Contribution of our Air Force is monumental. They are always at the forefront, be it in protecting skies or in times of disasters".

(TOP) CHIEF OF THE AIR STAFF AIR CHIEF MARSHAL ARUP RAHA REVIEWING THE AIR FORCE DAY PARADE; (MIDDLE) AIR WARRIOR DRILL TEAM DISPLAYING THEIR ALLURING SKILLS DURING THE AIR FORCE DAY PARADE; (ABOVE) IAF SU-30MKI ESCORTING THE C-17 GLOBEMASTER III DURING THE FLY PAST

PHOTOGRAPHS: SP GUIDE PUBNS, IAF

(TOP) IL-76-BASED AWACS AIRCRAFT ON STATIC DISPLAY;
(MIDDLE) PILATUS PC-7 MKII TURBOPROP TRAINER;
(ABOVE) MI-17V5 HELICOPTER

Not to be left behind, Honourary Group Captain Sachin Tendulkar too expressed his sentiments about the IAF. His post on the social media read: "I am proud of the dedication of the IAF. Every member plays his part to perfection. Thank you to each one of them for their commitment and many sacrifices."

AIR AND STATIC DISPLAY

The commencement of the parade was marked by the flag-bearing sky divers of the famous Akash Ganga team of the IAF. The team jumped from a high-flying An-32 tactical transport aircraft of the IAF and displaying their colourful parachute canopies carried out some impressive manoeuvres as they descended to the ground right before the enthralled audience. This was followed by a fly-past by three Mi-17V5 helicopters in a V-shaped formation carrying the Air Force ensign under slung. The Chakra formation consisting of three Mi-35 attack helicopters was next in the sequence. Fly-past by fighter aircraft of the IAF after the parade was led by three Jaguars in Vic formation, closely followed by three MiG-21Bison aircraft. The C-17 Globemaster III escorted by two Su-30MKI aircraft also took part in the fly-past. Vintage aircraft such as the Harvard and the de Havilland Tiger Moth helped revive memories of the past.

The Surya Kiran Aerobatic Team (SKAT) was back in the sky re-equipped with four brightly painted Hawk 132 advanced jet trainer (AJT) aircraft. The HJT-16 Kiran Mk II equipped SKAT had been disbanded four years ago on account of shortage of intermediate jet trainer aircraft. This was the highlight of the aerial display as formation aerobatics by SKAT has always enthralled audiences both in India and abroad! The grand finale was a thrilling display by the Sarang helicopter team with their heart-stopping manoeuvres.

The static display included the latest IL-76 based Airborne Warning and Control System aircraft, a multi-role French fighter Mirage 2000, Jaguar deep penetration strike aircraft and Russian fighters MiG-21, MiG-29 and the Su-30MKI which carries the BrahMos supersonic cruise missile. Apart from fighter aircraft, the IAF also displayed helicopters, the Hawk AJT, Pilatus PC-7 Mk II turboprop trainer, the indigenously developed radars.

IN NO WAY HAVE WOMEN PILOTS IN THE IAF PROVED TO BE LESS CAPABLE THAN THEIR MALE COUNTERPARTS

WOMEN TO THE FORE

But perhaps the most interesting feature of the Air Force Day celebrations this year was the announcement by the CAS that plans are afoot to induct women pilots into the fighter stream of the IAF. So far, the 94 women pilots and 14 women navigators in the IAF are restricted to fly transport aircraft and helicopters. Women pilots and navigators have been operating transport aircraft to forward bases and flying helicopters even in remote areas and over inhospitable terrain of the Siachen Glacier. In no way have they proved to be less capable than their male counterparts. Apparently, as per a statement from Manohar Parrikar, the Minister of Defence, the government is in favour of this proposal which indeed is clear departure from the position held last year. In fact, the government is looking at combat role for women in all the three services and the IAF is in the lead in this regard. This will indeed be inspiring as well as challenging for the future generations of women and a positive development in respect of their emancipation and fulfilment of their aspirations!

INTROSPECTION

While the anniversary of the IAF is certainly an occasion to celebrate, it is also the time for introspection, to reminisce over the past and to prepare for the challenges that lie ahead. SP

PHOTOGRAPHS: SP GUIDE PUBNS

AIR MARSHAL WILLIAM AVERY Bishop was the foremost Canadian flying ace of World War I. He was credited with 72 victories and awarded the Victoria Cross in the course of his brief operational career.

'Billy' Bishop was born in Owen Sound, Ontario, Canada on February 8, 1894. At age 15 he made an 'aircraft' out of cardboard, wooden strips and string and flew off the top of his three-story house. Thankfully, he emerged unscathed from the wreckage. During World War I, he was sent to France with a Canadian mounted infantry unit. But the trenches, the mud and the lack of action frustrated him. One day he saw an aircraft gracefully alight on a nearby field before taking off again. He later wrote, "How long I stood there gazing into the distance I do not know, but when I turned to slog my way back through the mud, my mind was made up. I knew there was only one place to be on such a day – up above the clouds and in the summer sunshine. I was going into the battle that way. I was going to meet the enemy in the air."

In 1915 Bishop was accepted by the Royal Flying Corps, but only as an observer. In the course of a wartime mission over France he experienced engine failure after take-off, which left him with a badly wounded knee. However, the injury may have saved his life because, while he was recuperating, his squadron was almost completely annihilated in the Battle of the Somme of September 1916. He pulled strings to overcome major medical objections and was soon accepted for pilot training at the Central Flying School. Six months later, on March 17, 1917, he arrived at 60 Squadron near Arras, to fly the Nieuport 17 fighter. The German Air Force, with the famous Baron Manfred von Richthofen in the lead, was in the process of massacring the Allied fighters. Five British aircraft were being shot down for the loss of just one German plane, while a raw British pilot could hope to survive just 11 days on an average. Bishop was given a few simple orientation flights but no operational training of any kind before he was launched into war. A week later, he was ordered to return to flight school because he crash-landed his plane during a practice flight. However, the squadron commander persuaded the authorities to let him stay until his replacement arrived. The very next day, March 25, 1917, Bishop claimed his first kill – an Albatros DIII Scout. He never looked back.

Any pilot who wished to venture out on 'lone-wolf' missions was promptly permitted. So Bishop flew the standard patrols with his squadron and on his free days, flew alone deep into enemy territory in search of prey. By April 8, he recorded his fifth victory and became a fighter ace. The history of 60 Squadron calls April 1917 'Bloody April' because in that month they lost 13 of their 18 original pilots plus seven replacements. Bishop however, seemed to have a charmed life and claimed 12 kills in the month. He was soon promoted to Captain and revelled in leading less experienced pilots into battle. Since his combat training had been rudimentary, he learned on the job. His aim was to get behind and above the enemy, achieve surprise, swoop down from the direction of the sun if possible and shoot him down sometimes even before being detected. He did not hesitate to disengage when the element of surprise was lost. He was reputed to be naturally blessed with superb eyesight and an excellent sense of situational awareness, both of which are vital for fighter pilots. The Germans soon learned to dread the sight of his blue-nosed Nieuport 17, calling him 'Hell's Handmaiden'.

BILLY BISHOP (1894-1956)

Bishop was reputed to be naturally blessed with superb eyesight and an excellent sense of situational awareness, both of which are vital for fighter pilots

May 1917 was a relatively quiet month; but on June 2, Billy Bishop took off just before 4 a.m. on a solo sortie to attack a German aerodrome. He claimed to have shot down three aircraft in the process of taking off to attack him and destroyed several more on the ground. This spectacular feat earned him the Victoria Cross. He was granted leave for some months, before he returned to the front. However, since the Canadian Government was worried that such an inspirational figure might be lost, he was ordered to return to England for a less dangerous assignment. On June 19, 1918, the day he was to leave France, he added another five aircraft, to make a total of 72 kills during the War.

Billy Bishop died on September 11, 1956. Long after his death, allegations began to surface that his combat claims had been exaggerated and that he did not deserve the Victoria Cross. Given the fog of war, conflicting claims, the destruction of some war records and the uncertain authenticity of others, there is no way to conclusively confirm or deny these allegations. His Victoria Cross is perhaps the only one on record that was awarded entirely on the central personality's evidence, without corroboration. Maybe the Allies, having suffered great reverses, were in desperate need of instant heroes and Bishop fitted the bill. It is also well known that fighter pilots have a reputation second only to fishermen in recounting their exploits. After all, in the heat of battle, when events happen in quick time in three dimensions and death may be an instant away, it is almost impossible for anyone to keep an accurate picture of events. What the pilot reports is often what the brain wishes to remember rather than what really happened. Even the biggest sceptics do not dispute either Billy Bishop's bravery or his combat ability and concede that he downed over 20 German aircraft. And that's no mean achievement. SP

— Joseph Noronha

ROSOBORONEXPORT WILL HOLD RUSSIA'S LEADING POSITIONS ON THE GLOBAL ARMS MARKET IN THE AEROSPACE SECTOR

At the MAKS 2015 International Moscow Aerospace Show Russia's special exporter Rosoboronexport signed contracts with Belarus, Jordan and Spanish company HISDESAT Servicios Estratégicos SA.

ROSOBORONEXPORT SIGNED CONTRACTS WITH Belarus to deliver five Tor-M2K SAM systems, Jordan to supply P-7 airdrop platforms and with HISDESAT Servicios Estratégicos SA, a Spanish satellite services operator, to launch the PAZ spacecraft in 2015.

At MAKS 2015, Rosoboronexport also held constructive talks around the potential for delivery of aircraft and air defense systems.

"Now is the time when our sustained and consistent efforts to promote a wide range of the latest Russian aircraft and air defenses are starting to yield firm contracts. We have managed to gain a foothold in new markets, regain our lost positions in a number of countries and continue to intensely develop military-technical cooperation with our traditional partners. Growing interest among foreign customers in new weapon models and Rosoboronexport's comprehensive marketing strategy to promote Russian military and dual-purpose products are a guarantee that Russia will hold its leading positions in the global arms market in the aerospace sector," said Rosoboronexport's first deputy general director Ivan Goncharenko.

Among the promising export models that Rosoboronexport showed to its foreign partners at MAKS 2015 were the Su-35 and MiG-29M/M2 multifunctional fighters, Yak-130 combat trainer, Il-76MD-90A military transport, Be-200 amphibious aircraft, Ka-52 and Mi-28NE attack helicopters, Mi-26T2 heavy transport helicopter, Ka-226T light utility helicopter, Mi-17 type military transport helicopters equipped with advanced avionics and navigation equipment. As to air defenses, the Company will conduct the presentations of the Igla-S MANPADS, Pantsir-S1 SPAAGM system, Tor-M2E and Buk-M2E SAM systems, Antey-2500 air defense missile system as well as the latest EW systems.

(TOP) ROSOBORONEXPORT CEO ANATOLY ISAYKIN CONDUCTED TALKS AT MAKS-2015; (MIDDLE) KA-52K HELICOPTER; (ABOVE) TOR-M2K SAM SYSTEM.

Particular attention at exhibition was paid to technical and scientific cooperation and establishing joint and license production facilities and customer service. Today, Rosoboronexport, together with Russian aircraft manufacturers, is implementing a global strategy to establish service centers for maintenance and repair of Russian aircraft and helicopters in almost all regions of the world, including in the framework of offset agreements with the attraction of local companies and appropriate transfer of technology.

Such helicopter repair service centers are being established in Brazil, Venezuela and Peru and aircraft repair service centers – in Vietnam, India, Myanmar and China. Prospects for building service centers are also being actively discussed with other Rosoboronexport's partner countries, including the European countries, where Russian aircraft are currently in service.

Over 15 years since its foundation, Rosoboronexport has signed contracts to supply foreign customers with more than 360 aircraft, 180 assembly kits for licensed production of Su-30MKI fighters in India, as well as over 800 Mil and Kamov helicopters. SP

QUICKROUNDUP

AGUSTAWESTLAND

Eight Lynx Mk21A maritime helicopters will be transported by XPO Logistics from Brazil to the UK for undergoing a phased upgrade by AgustaWestland, who plans to replace engines, navigation systems, display consoles and mission avionics.

BOEING

Boeing has been selected as the prime contractor for the US Air Force's Eagle Passive Active Warning Survivability System (EPAWSS). This new electronic warfare suite will counter threats and better protect aircrew. The EPAWSS programme which will upgrade existing F-15 aircraft is valued at approximately $4 billion.

Boeing has announced that EVA Airways' intent to purchase up to 24 Boeing 787-10 Dreamliners and two additional Boeing 777-300ER (Extended Range) jetliners, in a deal valued at more than $8 billion at current list prices. EVA Airways will join the Boeing 787-10 launch customer team and will be one of the first airlines in the world to introduce the latest member of the Dreamliner family.

Boeing has completed its upgrade of all US Air Force F-22 Raptor Mission Training Centers with its high-fidelity Constant Resolution Visual System. The system trains pilots in a more realistic visual environment than current simulators and allows them to experience extreme manoeuvres that typically are only practiced in a simulator.

CAE

CAE has announced a series of training solution contracts including the sale of nine full-flight simulators and training programmes with over 15 global airlines valued at more than $232 million.

CAE has announced that it has won defence contracts, included as part of its second quarter order intake, valued at more than $76.6 million to provide training and simulators for global customers. Some of the key contracts include for the US Air Force for KC-135 Aircrew Training System programme, for the US Navy to continue providing T-44C aircrew training and a five-year contract for the German Air Force's Eurofighter training.

DSCA

The State Department has approved under the foreign military sales (FMS), a possible sale to Spain for MQ-9 Block-5 aircraft and associated equipment, parts and logistical support for an estimated cost of $243 million. The Defense Security Cooperation Agency delivered the required certification notifying Congress of this possible sale on October 5, 2015.

DENMARK

Denmark is reportedly looking to buy a fifth C-130J Super Hercules military transport aircraft rejecting the A400M in the process. Plans to buy the Airbus design were reportedly

MILITARY

ASIA PACIFIC

CAS INAUGURATES EMI-EMC TESTING RANGE

The Chairman Chiefs of Staff Committee and CAS Air Chief Marshal Arup Raha inaugurated the Electro-Magnetic Interference – Electro-Magnetic Compatibility test facility and Near Field Test Range at Bharat Electronics Limited (BEL), Ghaziabad, on September 21, 2015. The setting up of these state-of-the-art testing facilities is a part of the transformation process of BEL into a major R&D and manufacturing centre of excellence in the critical field of electronic systems in the country for the armed forces.

INDIA TO INDUCT TEJAS MARK 1-A FIGHTER AIRCRAFT

The Indian Ministry of Defence has decided to induct at least seven squadrons of the 'Made in India' Tejas Mark 1-A light combat aircraft into the Indian Air Force (IAF) to make up for the existing voids of fighters. The Tejas Mark 1-A will be marginally better than the Tejas Mk I. The IAF has agreed to induct the Tejas Mark 1-A as it urgently needs more than 120 light-weight fighters for air defence. It is understood that the Tejas Mark1-A will be lighter than Tejas and deliveries are likely to start in 2016. An improved version of Tejas Mark1-A, i.e. Tejas Mark II is likely to be inducted by 2024.

BOEING TO SUPPLY APACHE AND CHINOOK HELICOPTERS

The India Ministry of Defence has finalised its order with Boeing for production, training and support of Apache and Chinook helicopters. India will receive 22 AH-64E Apache attack helicopters and 15 CH-47F Chinook heavy-lift helicopters. Both are the latest models of these aircraft. "This is a milestone in Boeing's expanding commitment to India," said Pratyush Kumar, President, Boeing India. Large sections of the Chinook fuselage are already manufactured in India and discussions are ongoing with our Indian partners to make Apache parts." In a later development, Boeing has announced on October 16, 2015, that it plans to assemble one of the two helicopter designs in India. Boeing had agreed to a 30 per cent offset clause as part of the contract for the two helicopter designs, which is expected to bring in a billion dollars worth of business to the Indian aerospace industry.

IAF SU-30 PILOTS FOCUSING ON BVR COMBAT

Pilots of the Indian Air Force (IAF) who fly the Su-30MKI combat aircraft are focusing on beyond visual range (BVR) combat and night flying capabilities even as they gear up for the integration with the Su-30MKI, of the 'game changer' BrahMos missiles that has a strike range of nearly 300 km. The current BVR missiles have a range of about 50-70 km. They are also looking forward to the plane's next-generation 'Super 30' version which will have advanced avionics.

LIGHT UTILITY HELICOPTERS UNDER 'MAKE IN INDIA'

To meet the urgent requirements of the armed forces, India is set to have three different lines of light utility helicopters all of which will be manufactured under the 'Make in India' initiative. It was reported that despite a deal with the Russian Government for Ka-226 helicopters, two other lines, including for a Western helicopter that it still to be selected, will be required to keep pace with the demand of the the Indian armed forces. Indicating that a major 'Make in India' project for the private sector to produce close to 200 helicopters in partnership with a foreign vendor is still alive and RFP is expected soon.

SHOW CALENDAR

8–12 November
DUBAI AIRSHOW
Dubai World Central, Dubai, UAE
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17–19 November
NBAA BUSINESS AVIATION CONVENTION AND EXHIBITION, 2015
Las Vegas Convention Center, Henderson Executive Airport, Las Vegas, Naveda, USA
www.nbaa.org/events/bace/2015

1–2 December
MILITARY AIRLIFT AND RAPID REACTION OPERATIONS
Hotel NH Collection Sevilla, Sevilla, Spain
www.smi-online.co.uk/defence/europe/military-airlift-rapid-reaction-operations

21–23 January, 2016
BAHRAIN INTERNATIONAL AIRSHOW
Sakhir Airbase, Bahrain
www.bahraininternationalairshow.com

INDUSTRY

ASIA-PACIFIC

HAL'S NEW HELICOPTER COMPLEX

All hurdles have been cleared for the construction of a helicopter complex at Bidarehalli Kaval village in Gubbi taluk

APPOINTMENTS

AIRBUS GROUP
Airbus Group has appointed Dirk Hoke (46) to succeed Bernhard Gerwert (62) as CEO of Airbus Defence and Space (DS) effective April 1, 2016.

INDIAN AIR FORCE
Effective October 19, 2015, Air Commodore Pawan Mohey took over command of Air Force Station New Delhi from Air Commodore G. Amar Babu.

INMARSAT
Inmarsat, the leading provider of global mobile satellite communications services, has appointed Sam Matar as Director of Airline Market Development, with responsibility for expanding the company's airline customer base and revenues in the strategically important North America market.

PRATT & WHITNEY
Daniel Eigenbrode, Vice President of Supplier Quality at Pratt & Whitney, has been named Chair of the G22 Aerospace Engine Supplier Quality (AESQ) Technical Committee.

NORTHROP GRUMMAN
Northrop Grumman Corporation has announced the following appointments:
- Gloria Flach, currently Corporate Vice President and President of the Electronic Systems sector, as the Chief Operating Officer.
- Kathy Warden, currently Corporate Vice President and President of Information Systems, will be Corporate Vice President and President of Mission Systems.
- Chris Jones, currently corporate Vice President and President, Technical Services, will lead the new Technology Services Sector.

ROLLS-ROYCE
Effective November 1, 2015, Rolls-Royce Holdings plc has appointed Sir Kevin Smith CBE as a Non-Executive Director on the Board of the company. He will also become a member of the Nominations and Governance Committee, the Remuneration Committee and the Science & Technology Committee.

GULFSTREAM
In September 2015, Gulfstream Aerospace Corp announced the following appointments:
- Sheryl Bunton as the company's Chief Information Officer (CIO).
- Bill Skinner, Vice President and Corporate Controller/Treasurer as Vice President, Treasurer and Financial Planning.
- Kimberly Benson as Vice President, Corporate Controller.
- Brian Durrence as Vice President of Engineering.
- Jim Bunke as Sales Director, North American Sales, West Division.

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)
On September 24, 2015, IATA announced two senior management appointments as under:
- Gilberto Lopez Meyer as Senior Vice President for Safety and Flight Operations.
- Nick Careen as Senior Vice President for Airport, Passenger, Cargo and Security.

of Tumakuru district, initially targeted at production of light utility helicopter (LUH). The state government has also agreed to relocate high-tension wires running over the area. The complex will include helicopter manufacturing systems, hangars, composites and component manufacturing factories and engine component manufacturing units. The complex is likely to be ready by 2017-18.

FIPB CLEARS TATA-AGUSTAWESTLAND HELICOPTER PLANT PROPOSAL
The Foreign Investment Promotion Board (FIPB) has cleared the proposal to set up a helicopter assembling unit by Indian Rotorcraft (IRL), a joint venture between AgustaWestland and Tata Sons. The proposal to assemble AgustaWestland's AW119Kx helicopters has been hanging fire for over two years, with FIPB assigning no reasons. IRL has sought the nod to go for AW119Kx as the helicopter model in place of AW119Ke and change the foreign investor in the wake of an internal reorganisation through merger within the AgustaWestland group effective January 1, 2014.

QUICKROUNDUP

edly dropped on financial grounds, with operating costs deemed too high by the Danish Defence Ministry.

HAL
Light attack helicopter developed by the Hindustan Aeronautics Ltd (HAL) has completed its latest set of trials on October 16, 2015, following several months of hot/cold weather and high-altitude testing. The Indian Army has ordered 114 of the helicopters, with the Indian Air Force also ordering 65 to date. HAL is now anticipating military airworthiness clearance with weapons trials now scheduled to begin.

INDIAN AIR FORCE
The Indian Air Force has signed a $1.2-billion contract with domestic firm Bharat Electronics Ltd for radar integration services following clearance of the project by the Cabinet Committee on Security last month. The work will mesh the country's civilian and military radar systems as well as establish new nodes in the country's growing ground-based radar network.

L-3 COMMUNICATIONS
L-3 Communications has announced that it has been competitively awarded a $30-million contract from the US Coast Guard to missionize two C-130J Super Hercules aircraft using a next-generation mission system suite.

LOCKHEED MARTIN
Lockheed Martin and the US Air Force (USAF) have reportedly reached an agreement on the acquisition of C-130J Super Hercules transport aircraft. The five-year contract will see 83 C-130Js delivered to the USAF, Coast Guard and Marine Corps and is anticipated to be finalised by the end of this year. Lockheed Martin has invested nearly $1 billion into the development of the aircraft which has been purchased by 16 countries including Canada, India, Israel and Norway.

Lockheed Martin has received a $305.4 million contract from the USAF for continued production of the joint air-to-surface standoff missile (JASSM) and its extended range (ER) version. The Lot 13 contract includes 140 baseline JASSMs for the US and international partners, 140 JASSM-ER missiles, data, tooling and test equipment.

NASA
NASA has awarded a key contract to Boeing, the International Space Station's prime contractor, to continue providing key engineering support services, resources and personnel to the programme through to September 30, 2020. The contract, valued at $1.18 billion, has been extended for five years.

DHRUV CONTRACT CANCELLED

REPORTS IN THE MEDIA indicate that Ecuador has unilaterally terminated a contract with the Hindustan Aeronautics Limited (HAL) after four of the seven Dhruv advanced light helicopters (ALH) bought in the period between 2009 and 2012 from the state-owned Indian aerospace major in a contract worth $45.2 million, were lost in crashes. Two of the recent accidents were caused by mechanical failure. The three remaining Dhruv helicopters have been grounded.

The Dhruv ALH project launched in 1984 had undeniably been plagued by problems as is usually the case with the development of new platforms. However, despite the impediments, the maiden flight of the prototype was undertaken in 2002. Along with supply of the platform to the Indian armed forces, HAL had embarked on a sales drive of its Dhruv as a low-cost alternative to military and utility helicopters from Western aerospace majors. Apart from the seven delivered to the Ecuadorian Air Force (EAF), HAL has also supplied Dhruv to Israel, Nepal, Mauritius, Suriname and the Maldives for operation by their respective security establishments. The Dhruv ALH had also been offered to Chile, Malaysia and Indonesia.

After the crash of one of the Dhruvs in October 2009, Ecuador reportedly considered returning the remaining six helicopters to HAL amid claims of the aircraft being technically flawed. However, in the crash investigation in which HAL participated, it was established that the cause of the accident was pilot error. In February 2011, the EAF was reported to be satisfied with the Dhruv's performance and was considering placing further orders. In July 2011, media reports in Pakistan indicated that the Dhruv fleet with the EAF suffered from "poor after-sales service, expensive spares and over-invoicing". EAF however, publically denied these reports describing them as "propaganda by vested interests" and praised the performance of Dhruv.

The problem of frequent crashes in a fleet of aircraft owing to technical reasons, whether fixed- or rotary-wing, can be attributable either to inadequate product support by the original equipment manufacturer (OEM) or to lack of proper maintenance by the operator. In this case, Ecuador alleged that HAL had failed to ship in the required time frame, some of the spare parts required for the upkeep of the helicopters as ordered by the EAF. As per a response by HAL, maintenance of the Dhruv fleet was exclusively the responsibility of the EAF as the two-year warranty period for HAL to provide after-sales service support for the seven helicopters had long expired. A very insensitive response indeed!

In India, more than 200 of these indigenous rotary-wing platforms are in service with the armed forces and have been used extensively in relief operations following natural calamities such as the flash floods in different parts of the country in the devastating earthquake in Nepal.

The Indian armed forces however have not been totally satisfied with the performance of the Dhruv. After operating six of these for some time, in 2008, the Indian Navy rejected the naval variant as it had failed to meet basic operational requirements and had then decided not to place further orders with HAL. However, in November 2013, the Indian Navy commissioned its first Naval Air Squadron at Kochi equipped with the land-based version. At the commissioning ceremony, the Indian Navy said, "The Dhruv helicopter has transformed into an advanced search and rescue helicopter, also used for missions like heliborne operations and armed patrol with night vision devices". The Indian Army and the Indian Air Force that operate much larger fleets of the Dhruv have experienced frequent technical failures, some resulting in loss of aircraft as well as precious lives. Following the air crashes, the Dhruv fleet has had to be grounded a number of times pending investigation and determination of the reasons for the disasters. However, despite the technical inadequacies, the Indian armed forces have not only logged over 1,50,000 hours since its induction; but continue expand their inventories.

The decision by the Government of Ecuador to terminate the contract for Dhruv will undoubtedly be a major setback for the Indian aerospace major HAL

The decision by the Government of Ecuador to terminate the contract for Dhruv will undoubtedly be a major setback for the Indian aerospace major HAL. Unfortunately, on account of this development, credibility of HAL in the global aerospace market will be severely dented, explanations, clarifications and justification by the organisation notwithstanding. HAL cannot afford to treat foreign customers the way it can treat the captive domestic customers and get away with it. **Unless HAL is prepared to address quality issues with all sincerity, especially in respect of their products marketed abroad, and sheds its bureaucratic approach to win the confidence of customers while dealing with them, there is little chance that its efforts to penetrate foreign markets will succeed.** SP

—By Air Marshal B.K. Pandey (Retd)

ILLUSTRATION: ANOOP KAMATH

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