ISSN 2230-9225

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FDI IN DEFENCE:
EASE OF BUSINESS?

REGIONAL AIRLINES
ON
INDIA'S CIVIL AVIATION
POLICY DRAFT

FIRST-HAND ACCOUNT

NAVIGATING THE MINEFIELD OF ACQUIRING A BIZJET

MILITARY

- SMALL IS BIG: KING AIR 350ER
- AIR STRIKES ON ISIS
- IAF WOMEN PILOTS CHEER SOLO AVIATOR TRACEY

BUSINESS AVIATION

- NBAA '15: RESOUNDING SUCCESS
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COVER IMAGE:

Trauma of a potential aircraft operator going through the process of regulatory nightmare of first acquiring, and then getting clearances to operate a bizjet.

Cover image by: Kunal Verma / SP Guide Pubns

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LEAD STORY

NAVIGATING THE MINEFIELD OF ACQUIRING A BIZJET

This is one of the most traumatic experiences that I have undergone, and I have sworn that I will never make this mistake again.

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APPLIED FOR

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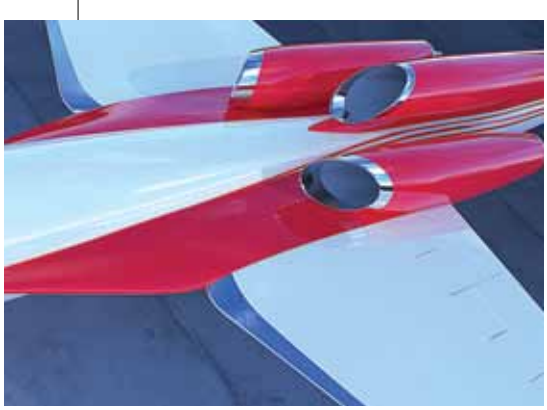

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THE REVISED DRAFT NATIONAL CIVIL AVIATION POLICY IS A DEFINITIVE STEP IN REALISING THE POTENTIAL OF THE AVIATION SECTOR, EVEN THOUGH IT MAY NEED FINE-TUNING BASED ON INDUSTRY INPUTS

THE WORLD BANK HAS ranked India 134 of 189 in 'ease of doing business' and has projected that it would move up to 130 next year. There is a lot of work that needs to be done to help sustain the economic reforms and also put the country on accelerated economic development.

The revised draft National Civil Aviation Policy is one such definitive step in realising the potential of the aviation sector, even though it may need fine-tuning based on industry inputs. The government has begun well on this note, particularly with its emphasis on enhancing regional connectivity which, if it fructifies, will open up many more business opportunities. The draft Civil Aviation Policy is expected to come up before the Cabinet in December, hopefully with further corrections as sought by the industry.

The regional airlines like Air Costa and Air Pegasus have given a mixed response. While welcoming the general direction of the policy, they have sought removal of the cap on ticket pricing which the Ministry has pegged at ₹2,500 per passenger per hour flight and want that ticket pricing should be based on market conditions.

Another aspect of the policy is that it is giving due importance to developing cargo business, considering that it is a critical element in economic growth. The policy indicates the need for infrastructure creation such as warehouses, cold storage chains, etc, to facilitate efficient movement of goods.

With regard to foreign direct investment (FDI) in defence, which has been raised from 26 per cent to 49 per cent, the original equipment manufacturers (OEMs) are of the view that whether it is 26 or 49 does not really matter as with a minority stake, they will not be able to give direction to the company or bring in the latest of technologies. Where large investments with transfer of high-end technology is involved, FDI of 50 per cent or higher should also be permitted under the "Automatic Route" to provide the desired level of incentive for global aerospace majors.

As for general aviation and business aviation is concerned, the hurdles are that many more and we have a first-hand account of the harrowing experience one goes through in acquiring an aircraft in India. Rohit Kapur, Managing Director of Arrow Aircraft and former President of Business Aircraft Operators Association (BAOA), has talked about his experience, which many would identify with, of how acquiring an aircraft is akin to navigating a minefield.

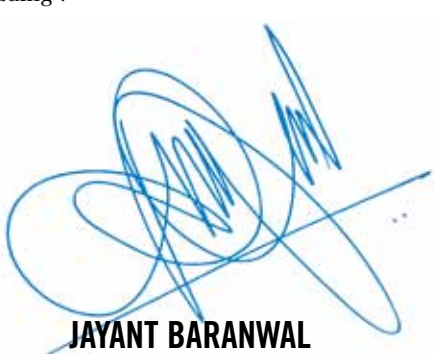
Much more needs to be done by way of appropriate changes in policy, simplification of procedures through the introduction of single-window clearance, removal of bureaucratic impediments and red tape – all with the aim of making it easier to set up and conduct business in India. There is certainly the need to reduce the multiple points of control as each of these has the potential to become a point of corruption.

When on business aviation, the iconic business event – National Business Aviation Association conference and exhibition which concluded in Las Vegas recently – was a resounding success as the segment is hoping to break new ground in emerging markets in the near future. Similarly, the recently concluded Dubai Airshow, said to be the fastest growing aerospace exhibition, has indicated how the Middle East is becoming a major hub of aviation industry, thanks to its location on the East-West axis.

On the military front, Air Marshal B.K. Pandey (Retd) has analysed the King Air 350 aircraft and its capabilities as a special mission aircraft. Away from the 'small is big' aircraft, we have Air Marshal Pandey reporting on the air strikes on ISIS targets in Syria, in the aftermath of the terror attacks in Paris.

On a happier note, we have coverage of the historic flight of Tracey Curtis-Taylor from London to Sydney on a biplane, a truly awe-inspiring journey by a woman who is known for breaking records.

Happy reading !



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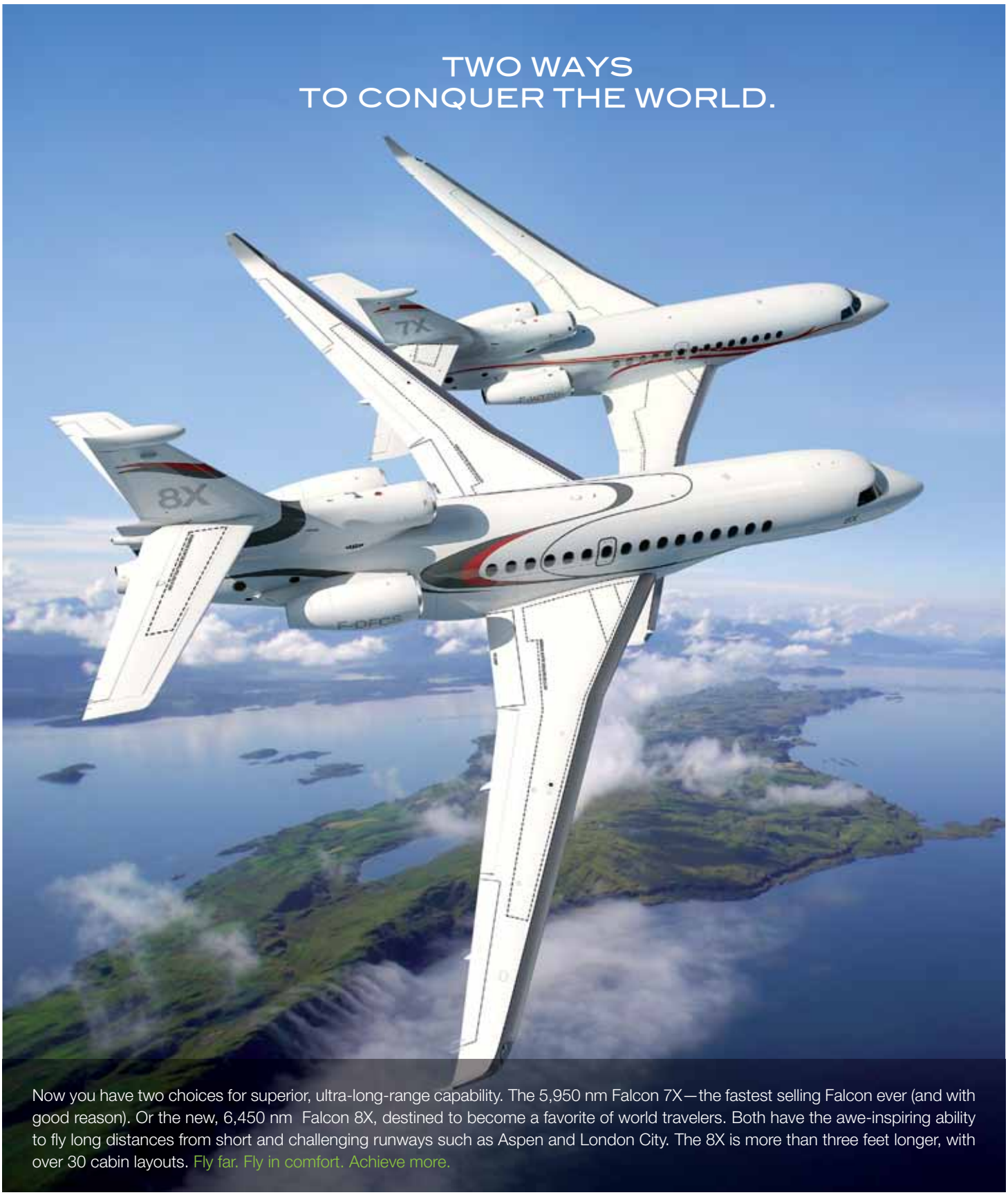

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NEWS WITH VIEWS

NEWS:

BOEING AND TASL TO FORM A JOINT VENTURE

On November 9, 2015, Boeing and Tata Advanced Systems Limited (TASL) announced a joint venture (JV) to manufacture aerostructures and collaborate on integrated systems development opportunities. The JV will create a manufacturing centre of excellence to produce aerostructures for the Apache attack helicopter and take on manufacturing work packages across Boeing platforms, both commercial and defence. Boeing and TASL intend to grow the JV to collaborate on development and selling of integrated systems. "This partnership will capitalise on India's industrial capability, innovation and talent to contribute to Boeing's long-term competitiveness and position us for future growth in the global marketplace," said Chris Chadwick, President and CEO of Boeing Defense, Space & Security.

PHOTOGRAPH: BOEING

VIEWS:

JOINT VENTURES (JV) BETWEEN foreign and Indian companies are not a new phenomenon for the industrial sector in India. Despite its insular nature, the Indian defence and aerospace industry entered into agreements for licensed production of military aircraft and weapons systems for which elaborate facilities were created within the country. The shining examples of military aircraft produced under licence are the several variants of the MiG-21 and the MiG-27 strike aircraft, the Hawker Siddeley HS-748 medium-lift transport aircraft jointly with a British aerospace major, the German Dornier Do 228 light utility platform, the Cheetah, Chetak and Cheetal rotary-wing platforms produced under licence from a French aerospace company. All these military platforms continue to render yeomen service with the Indian Air Force (IAF). Another major success recorded in JVs has been the Indo-Russian BrahMos supersonic cruise missile. The JV named BrahMos Aerospace was launched on February 12, 1998, between the state-owned Defence Research and Development Organisation (DRDO) and the Russian company NPO Mashinostroyenia. The first BrahMos cruise missile was launched on June 12, 2001. However, the Indian partner in all these cases of licensed production or JVs was the state-owned Hindustan Aeronautics Limited (HAL) in the case of the military platforms and the DRDO for the BrahMos cruise missile. The aerospace industry in the private sector for all practical purposes was non-existent or was tasked with manufacture of minor components.

But since the beginning of the current decade, signs of change for the better have begun to be visible in respect of the Indian aerospace industry in the private sector. Hyderabad-based TASL is a fully owned subsidiary of Tata Sons, entered into a JV with Sikorsky Aircraft Corporation to manufacture the Sikorsky S-92 helicopter in India for the domestic market as well as for export. So far, around 100 cabins of the S-92 have been manufactured all of which have been exported. In fact, it is understood that the next S-92 VVIP helicopter being inducted into the US Presidential Fleet will have its cabin made in India. Another TASL joint venture in India with Lockheed Martin has been producing aerostructures for the C-130 Hercules and its variants. But the most laudable achievement for TASL has been the clearance in May this year by the Indian Government of the proposal by Airbus Defence and Space-TASL JV for the manufacture in India of 40 of the CASA C-295 medium-lift military transport aircraft for the IAF and later possibly for foreign markets. And now the tie up with Boeing to manufacture aerostructures for the Apache attack helicopters in India will be an impressive feather in its cap.TASL is also planning to foray into the domain of unmanned aerial vehicles (UAV). The aim is to manufacture these platforms through collaboration with Israel Aerospace Industries (IAI) for the Indian armed forces as also for civilian applications.

But TASL is not the only one in the private sector that is making waves. In July this year, Airbus Helicopters announced plans to partner with Indian company Mahindra Defence, a unit of Mahindra Group, to produce helicopters in India. As per Guillaume Faury, President and CEO, Airbus Helicopters, the JV company will manufacture state-of-the-art helicopters of high reliability, quality and safety standards based on combat-proven platforms for the Indian armed forces. On parallel track, Russian Helicopters are to partner with Reliance Defence and Aerospace, a new company under the Ambani Group, to manufacture 200 of the Kamov 226T light utility helicopters for the IAF and the Indian Army. There is a possibility that this order could be doubled.

The Indian defence and aerospace industry is on the threshold of a new era that will be characterised by higher levels of self-reliance in the manufacture of military aircraft and weapon systems. The Indian Government is expected to spend around $600 billion over the next decade. Undoubtedly, there are immense opportunities for the major players in the Indian aerospace and defence industry in the private sector. The list of companies in the private sector that can make meaningful contribution to this national effort is long and growing. The 'Make in India' theme of Prime Minister Narendra Modi is now set to soar to unprecedented heights! SP

—By Air Marshal B.K. Pandey (Retd)

EASE OF BUSINESS IS YET AWAITED

Major global investors seeking to make large investments in the defence sector are unlikely to find the change to be a significant departure from the past, given the status quo in FDI norms

BARELY 48 HOURS AFTER the verdict in the elections in the state of Bihar that were somewhat uninspiring for the BJP, the Modi-led NDA Government at the Centre appears to have gone into a desperate overdrive to shift focus decisively from the humiliating political debacle to the national economy. This is one area where the majority of the population continues to have high hopes of delivery by the government.

On November 10, the government unveiled a new framework of regulations for foreign direct investment (FDI) into as many as 15 sectors of the industry in India. There has also been an effort to simplify procedures to enhance the ease of doing business in India. The high degree of difficulty entrepreneurs have always been confronted with while trying to set up business in India has indeed been a major impediment so far to the growth of the industry in India especially of the defence and aerospace sector.

Some of the important sectors proclaimed to be covered by the recent decision on FDI are infrastructure development, broadcasting, civil aviation, agriculture, plantation, manufacturing, single-brand retail, private sector banking and even defence. The timing of this announcement was significant as it came on the eve of the visit of Prime Minister Narendra Modi to the United Kingdom. This step by the government is timely as it would certainly help boost the profile of India globally as an investment destination. It is understood that this decision on FDI was taken in a hurry, without scrutiny of the proposal by the Cabinet, which will now be expected to provide ex-post facto sanction. (See Box for extract of Press Note of revised FDI related to the defence sector.)

In the capital-starved industry in India, FDI is generally seen as being a panacea for most if not all the ills plaguing the industry. Soon after coming to power at the Centre in May 2014, Prime Minister Modi embarked on a 'Make in India' campaign with the ultimate aim of creating a strong defence industrial base. FDI in the defence sector being an essential prerequisite for this mandate, as a first step, the government raised the limit of FDI from 26 to 49 per cent subject to scrutiny only by the Foreign Investment Promotion Board (FIPB). Under the UPA regime, FDI beyond 26 per cent required clearance by the Cabinet Committee on Security. To that extent there was some forward movement. Prime Minister Modi however, was determined to ensure that India shed its image of being one of the largest importers in the world of weapon systems.

With the changes implemented soon after taking over, the NDA Government had hopes that foreign investors would exploit the opportunities India had to offer across a wide range of industrial ventures, the defence industry certainly being one of the most lucrative. Data on FDI tabled in the Parliament in July 2014 had indicated that in the defence sector, in the preceding seven months, only six proposals for investment in the defence sector totalling to merely $15 million had been received. Of the six proposals, only two of them had reached the upper limit of 49 per cent. The intensity of response to the opportunity of FDI in the defence sector in India can be assessed when the size of the investment proposed to be made under this scheme in 2013-14 is viewed against the size of the contracts for military hardware concluded in the preceding 10 years that was valued at $60 billion.

Under the revised procedure announced on November 10 this year, the only meaningful change that has been introduced is that FDI up to 49 per cent in the defence sector would be permitted under the 'Automatic Route'. This implies that the need for scrutiny and clearance by the FIPB that was introduced in mid-2014, has been dispensed with. However, proposals for FDI beyond 49 per cent would still have to be cleared by the FIPB. The major global investors who would be desirous of seeking to exercise a degree of control over their investments in India and hence would perhaps prefer investments higher than 49 per cent, are unlikely to find the change to be a significant departure from the past. Some of these companies have even described the changes made to be 'cosmetic'. The government needs to do much more to really strengthen the indigenous defence industrial base. SP

—By Air Marshal B.K. Pandey (Retd)

FDI IN DEFENCE UP TO 49 PER CENT UNDER AUTOMATIC ROUTE

As per extant FDI policy in the defence sector, foreign investment up to 49 per cent is permitted under government approval route. Foreign investment above 49 per cent is also permitted, subject to approval of the Cabinet Committee on Security (CCS) on case to case basis, wherever the investment is likely to result in access to modern and state-of-the-art technology in the country. Portfolio investment and investment by FVCIs is restricted to 24 per cent only. In this regard, the following changes have inter-alia been brought in the FDI policy on this sector:

- Foreign investment up to 49 per cent will be under automatic route.
- Portfolio investment and investment by FVCIs will be allowed up to permitted automatic route level of 49 per cent.
- Proposals for foreign investment in excess of 49 per cent will be considered by Foreign Investment Promotion Board.
- In case of infusion of fresh foreign investment within the permitted automatic route level, resulting in change in the ownership pattern or transfer of stake by existing investor to new foreign investor, government approval will be required.

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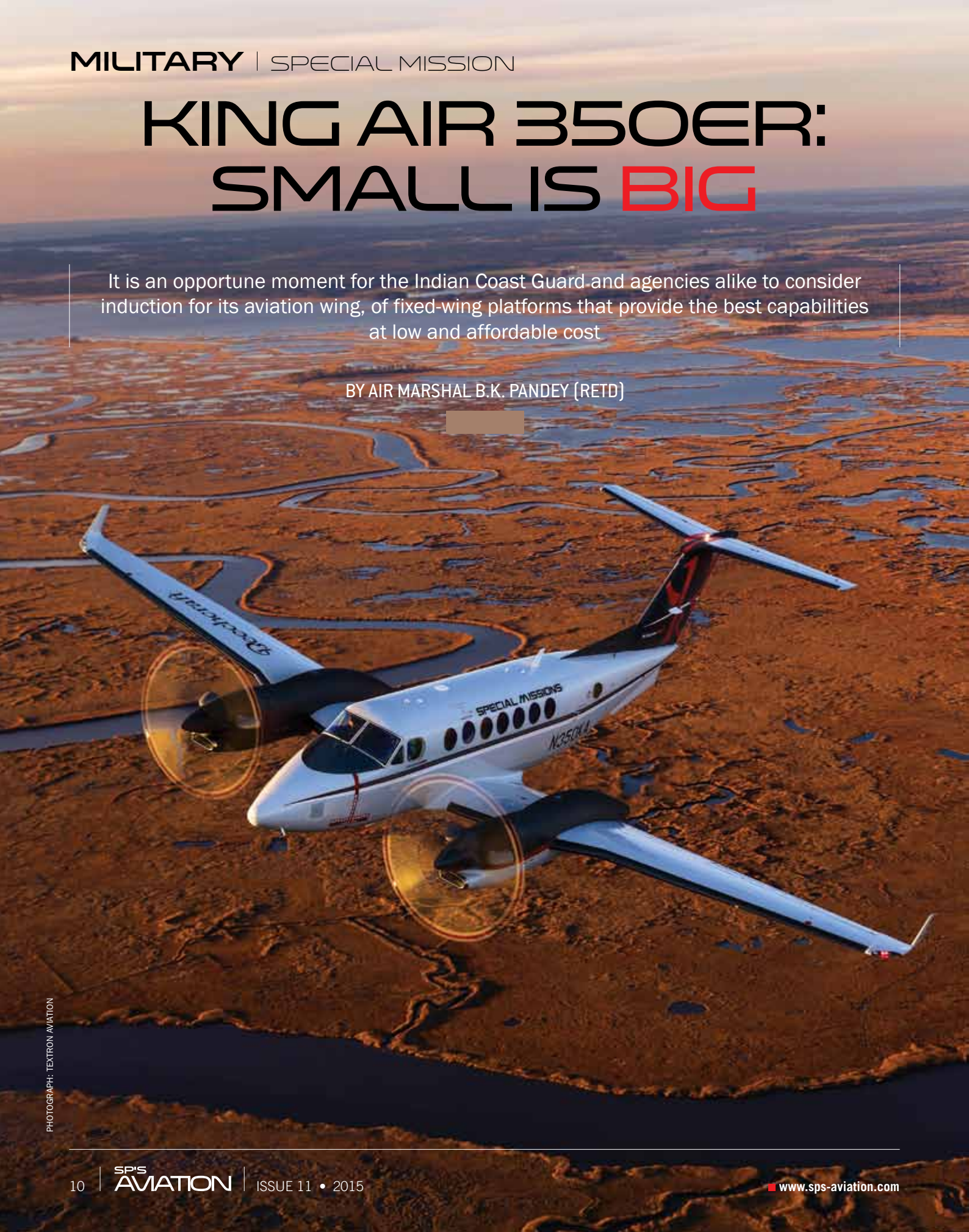
KING AIR 350ER: SMALL IS BIG

It is an opportune moment for the Indian Coast Guard and agencies alike to consider induction for its aviation wing, of fixed-wing platforms that provide the best capabilities at low and affordable cost

BY AIR MARSHAL B.K. PANDEY (RETD)



PHOTOGRAPH: TEXTRON AVIATION

"THIS IS THE MARITIME PATROL VERSION OF THE 350ER WHICH IS THE EXTENDED RANGE VERSION OF THE 350. CONSIDERING WHAT IS HAPPENING WITH THE MIGRANT SITUATION IN EUROPE THE 350ER CAN BE ON STATION OVER WATER FOR UP TO 10 HOURS (PENDING PAYLOAD) CONDUCTING BOTH SURVEILLANCE FOR BORDER PROTECTION AND SEARCH AND RESCUE MISSIONS. THE AIRCRAFT CAN BE CONFIGURED SEARCH AND IDENTIFY SMALL CRAFT AND CAN FIND INDIVIDUALS IN THE WATER WITH THE ABILITY TO DROP MARKERS AND LIFE RAFTS. THE AIRCRAFT CAN ALSO COMMUNICATE WITH SHIPS THAT ARE PART OF THE SEARCH AND RESCUE MISSION.

"IF THE AIRCRAFT IS NOT CONDUCTING SEARCH AND RESCUE, IT CAN BE RECONFIGURED FOR AIR AMBULANCE MISSIONS THUS CONTINUING TO CONTRIBUTE TO THE RECOVERY MISSIONS. THIS IS THE BEAUTY OF THE KING AIR 350ER, IT CAN PLAY MULTIPLE ROLES DEPENDING ON WHAT THE MISSION SITUATION REQUIRES."

— DAN KEADY, VICE PRESIDENT, SPECIAL MISSION AIRCRAFT, TEXTRON AVIATION

INDIA HAS A COASTLINE of 7,517 km both on the western and eastern flanks of the mainland as well as the island territories of the Andaman and Nicobar Islands in the Bay of Bengal and the Lakshadweep in the Arabian Sea. As provided by the yardsticks of the United Nations Convention on the Law of the Sea (UNCLOS), the size of the Indian exclusive economic zone (EEZ) is estimated to be around 2.2 million sq km, contiguous with the territorial waters of the mainland as well as those of the island territories.

In peacetime, apart from surveillance of India's EEZ for the protection of its natural resources and the preservation of its marine environment as stipulated by UNCLOS under rights and responsibilities, detection of existing, developing or potential threat to national security from the sea, has acquired even greater importance after the 26/11 episode. On this fateful day, terrorists sponsored by Pakistan, used the sea route to infiltrate into Mumbai, the commercial capital of the nation, and wreak havoc there. In fact, on December 31 last year, when the world was set to celebrate New Year's eve, the Indian intelligence and maritime security agencies responded swiftly and with the help of its Dornier Do 228 maritime surveillance aircraft, located the suspect vessel and helped ships intercept and destroy the explosive laden craft. The Indian Coast Guard (ICG) was thus successful in thwarting a repeat of 26/11 in which the possible target was one of the coastal cities of Gujarat. Despite the successful response jointly by the intelligence agencies and the ICG as well as the capability displayed, coastal security continues to remain a major national security concern.

HISTORY OF THE INDIAN COAST GUARD

Given the fact that the task of sanitising the large and widely dispersed EEZ was not only monumental but critical to national security as well, the need was felt as early as in the 1970s to create a dedicated organisation that could be assigned the responsibility of securing the EEZ. Based on the report by the Rustomji Committee for the Preservation and Protection of the EEZ, the ICG was established on February 1, 1997, with two small corvettes and five patrol boats that were transferred from the Indian Navy.

As the surveillance capability of land-based platforms and patrol vessels can be augmented and substantially enhanced through the employment of airborne platforms, the need was immediately felt to introduce aerial surveillance capability to the newly created ICG. The aviation wing of the ICG was thus established at Goa on May 22, 1982, with just two Chetak helicopters. The first fixed-wing squadron was raised on July 30, 1983, with two F-27 Fokker Friendship aircraft leased from the state-owned domestic carrier Indian Airlines. The first squadron equipped with Dornier Do 228 aircraft was commissioned at Daman in January 1987. Over the years since then, the ICG has grown considerably and today, it has 42 Coast Guard Stations, five Air Stations and 10 Coast Guard Air Enclaves. It operates 38 Dornier Do 228 maritime surveillance aircraft and 22 rotary-wing platforms. All its air assets are delivered by the Indian aerospace major the Hindustan Aeronautics Limited (HAL). While the rotary-wing platorms are a mix of licence-manufactured Chetak and the indigenous Dhruv advanced light helicopter, the fixed-wing fleet of Dornier Do 228 aircraft are of German origin that has been licence-manufactured by HAL since 1983. In view of the daunting challenges that lie ahead in the domain of Indian maritime security, the ICG will certainly need a more modern and capable fixed-wing platform. Coincidentally, as the aviation wing of the ICG is expected to embark on the next phase of modernisation in the near future, it would be an opportune moment to consider induction of fixed-wing platforms that provide the best capabilities at low and affordable cost. One good option would be the Beechcraft King Air 350ER that was showcased at the Air Show in Paris in 2007. Incidentally, Beechcraft was acquired by Textron in March last year.

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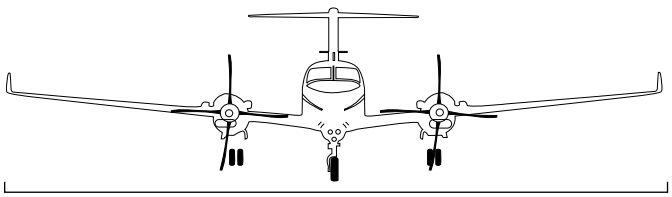
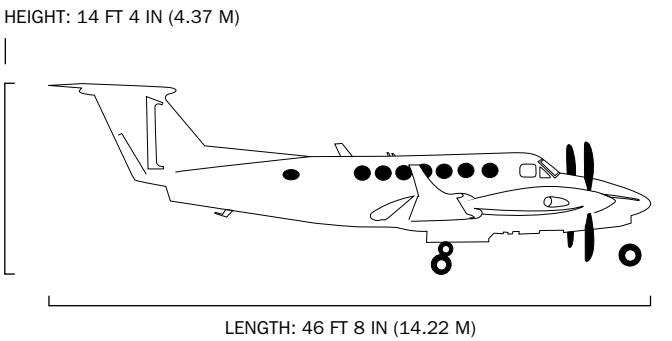
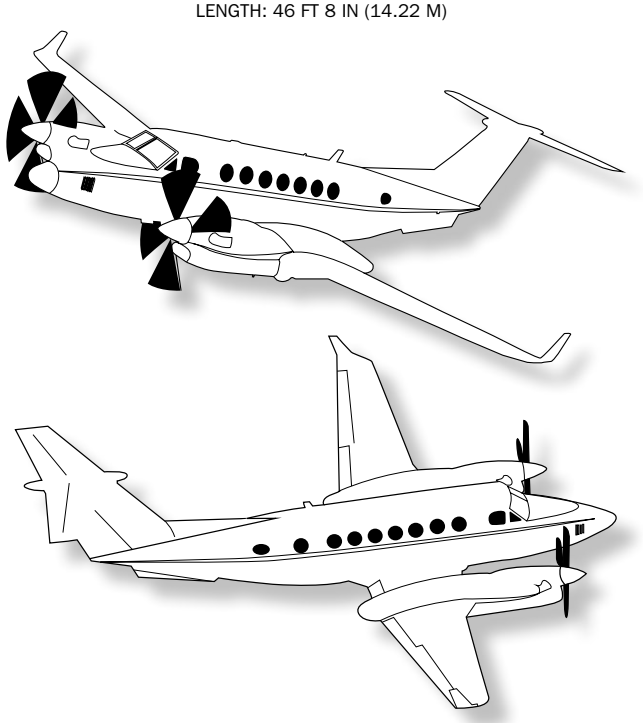
Since 1864, more than 7,300 Beechcraft King Air turboprops have been delivered to customers around the world,

KING AIR 350ER: SPECIFICATIONS

DIMENSIONS	
Length	46 ft 8 in (14.22 m)
Height	14 ft 4 in (4.37 m)
Wingspan	57 ft 11 in (17.65 m)
Wing Area	310 sq ft (28.8 sq m)
Wheelbase	16 ft 3 in (4.95 m)
Tread	16 ft 3 in (4.95 m)
CABIN INTERIOR	
Height	57 in (1.45 m)
Width	54 in (1.37 m)
Length	19 ft 6 in (5.94 m)
Maximum Passengers	9
PERFORMANCE	
Maximum Cruise Speed	303 ktas (561 kmph)
Maximum Range	2,678 nm (4,960 km)
Take-off Field Length	4,057 ft (1,237 m)
Landing Distance	N/A
Maximum Operating Altitude	35,000 ft (10,668 m)
Maximum Climb Rate	N/A
Maximum Limit Speed	N/A
POWERPLANT	
Manufacturer	P&WC
Type	PT6A-60A
Power Rating	1,050 shp (783 kW)







GRAPHICS: KUNAL VERMA

making it the best-selling business turboprop family in the world. The worldwide fleet has surpassed 60 million flight hours in its over five decades of service with corporate and commercial aviation as well as with the military for special mission operations in more than 94 countries across the world. The missions these platforms have undertaken range from traditional passenger and cargo transport to electronic and imagery surveillance, air ambulance, airway calibration, photographic mapping, training and weather modification. More than half of the platforms delivered belong to the King Air 200 and 300 series.

THE KING AIR 350ER – A VERSATILE PLATFORM

The Beechcraft Super King Air 350 has been a special airplane since its inception with its high payload capability, large size cabin which measures nearly 20 feet x 5 feet and offers impressive fuel economy. But the new King Air 350ER (Extended Range) version is designed to operate a unique mission profile. A derivative of the successful Beechcraft King Air 350, the King Air 350ER has been produced by Beechcraft Augsburg, a subsidiary of Textron Aviation. This is a twin-engine, turboprop aircraft that incorporates advanced technologies and has a flexible multi-mission capability. The aircraft is capable of

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KING AIR 350ER OFFERS UNMATCHED ECONOMY IN OPERATIONS OVER A WIDE RANGE OF MILITARY AND CIVILIAN SPECIAL MISSIONS

performing a range of special missions for the military and law enforcement agencies. It can be employed for a variety of roles such as intelligence gathering, reconnaissance, search and rescue, target acquisition, pollution monitoring, light transport, medical evacuation, flying training and any other type of mission that could fall under "special operations".

The King Air 350ER aircraft powered by two Pratt & Whitney PT6A-60A engines each of which is rated at 1,050 horsepower, has a maximum cruise speed of 578 kmph and a maximum range of over 4,300 km. The operational range of the King Air 350ER has been enhanced through the installation of additional fuel tanks in the nacelle. Although with the increase in fuel capacity, the maximum take-off weight of the platform has gone up from 15,000 lb to 16,500 lb, the endurance of the aircraft has also increased and can now remain on station comfortably for more than 12 hours. The landing gear has also been redesigned to cater for the increase in weight. The aircraft displays high degree of operational flexibility as it is capable of cruising at 555 kmph at 35,000 feet and is also capable of loitering at low speed at low altitude, a feature ideally suited for an aircraft employed air patrol duties. The reliability of the King Air 350ER has been adequately proven in operations by several nations across the world. The experience gained confirms that this platform offers unmatched economy in operations over a wide range of military and civilian special missions.

When compared to other platforms designed for similar missions, the King Air 350ER is small – measuring less than 47 feet in length and with a wingspan of under 58 feet. However, it is packed with the latest avionics and sensors. The state-of-the-art cockpit of the King Air 350ER has an advanced Collins Pro Line 21 integrated avionics suite. The special mission aircraft are fitted with the L3 Wescam MX-15 electro-optic/infrared system, Lynx-2 lightweight, high-performance, multi-function synthetic aperture radar units developed by General Atomics Aeronautical Systems. The radar operates in both synthetic aperture radar (SAR) and ground moving target indicator (GMTI) modes and has a range of 80 km. It provides high-resolution search and rescue imagery in all weather conditions. The aircraft also carries the AN/AAR-47 missile warning system and AN/ALE-47 countermeasures dispensing system. The maritime patrol version is fitted with the Airborne Tactical Observation and Surveillance system developed by Selex.

THE FUTURE

It has been reported that Beechcraft is working on a plan to integrate anti-submarine warfare (ASW) capability to the already long list of attributes offered by its King Air 350ER in the special missions market. Integration of ASW concept will equip King Air 350ER a capability of combating mini-submarines used by drug smugglers and the military. The new ASW system contemplated would significantly enhance the capability spectrum of the King Air 350ER in the maritime role. This would also provide Beechcraft with further opportunities to build more capable Special Missions aircraft in the future. SP

PHOTOGRAPH: TEXTRON AVIATION

FRANCE STRIKES: FRENCH AIR FORCE RAFALE IN ACTION TOWARDS THE STRIKE MISSION FROM ITS ADVANCED AIRBASE IN JORDAN

PHOTOGRAPHS: MINISTÈRE DE LA DÉFENSE

DECIMATING THE ISIS THROUGH AIR POWER

The major concern in all aerial strikes against the ISIS targets was the possibility of collateral damage and unintended killing of innocent civilians

BY AIR MARSHAL B.K. PANDEY (RETD)

THE ISLAMIC STATE OF Iraq and Syria (ISIS) is also known by several other names such as the Islamic State of Iraq and the Levant (ISIL), the Islamic State of Iraq and ash-Sham, ad-Dawlah al-Islāmiyah fī 'l-'Irāq wa-sh-Shām, Daesh for short in Arabic or just Islamic State (IS). The ISIS a very large militant group whose members are the fundamentalist Wahhabi/Salafi jihadis drawn largely from the Arabs of the Sunni sect from Iraq and Syria. By March this year, the ISIS had established control over large swath of territory in Iraq and Syria in its drive to establish an Islamic state in the Middle East ruled by strict Shariah law. With the help of local groups loyal to it, the ISIS has established control over a number of smaller areas in other countries such as Libya, Nigeria and Afghanistan. The ISIS also has affiliates in other parts of the world or carries out operations there all by itself, including in North Africa and in South Asia.

BRIEF HISTORY

The origins of the ISIS can be traced back to Al Qaeda whose story began with invasion of Afghanistan in December 1979 by the then Soviet Union. The al Qaeda was created to battle the occupation forces. However, after the withdrawal of the Soviet forces from the war-torn country, Al Qaeda split in 1999 and the break-away group headed by Abu Musab al-Zarqawi was named as Al Qaeda in Iraq (AQI). In 2006, Abu Musab al-Zarqawi, the leader of AQI, was killed in a US airstrike. In 2010, Abu Bakr al-Baghdadi assumed leadership of the AQI and continues till today. In April 2013, he renamed the organisation as the ISIS. In March 2015, the Nigerian-based Islamist sect Boko Haram pledged allegiance to ISIS.

In the last 16 years, the ISIS has grown from strength to strength and current estimates are that it has more than 30,000

fighters in its ranks. As per reports from the Indian Ministry of Home Affairs, 23 Indians also form a part of the group apart from the six that have already died in battles in Iraq. Combatants of the ISIS are armed with only light weapons consisting of automatic rifles, small arms and shoulder-fired missiles most of which have been acquired from stocks left over in Iraq after US withdrawal from there and from Syria. The group raises funds through extortion or receives massive donations from sympathisers amongst the affluent in the Middle East. Over the years, the group has become increasingly violent and intolerant, always attempting to influence conflicts in the Middle East. In Syria, the ISIS has been mounting attacks on both government forces and rebel factions in the Syrian Civil War. In Iraq, in early 2014, ISIS came into prominence after it drove the Iraqi Government forces out of key cities in western Iraq. In fact, this operation by the ISIS had driven the Iraqi Government to the verge of collapse, saved only through American military intervention.

CARNAGE IN PARIS

The world was traumatised on the evening of November 13, 2015, when a series of coordinated attacks terrorists including with three suicide bombers were mounted by the ISIS in Paris and Saint Denis, its northern suburb. Earlier in January this year, France had been rattled by a number of deadly attacks by Islamist militants which included the killing of 12 at the office of the satirical weekly *Charlie Hebdo*.

In the attacks on November 13 that have been described as the deadliest in the European Union since the bombing of a passenger train in Madrid in 2004, around 130 innocent civilians perished and nearly 400 were injured. The ISIS promptly claimed responsibility for the attacks which was described by François Hollande, the President of France, as "an act of war". The attacks in Paris was perceived by some as a response to aerial strike by France against the ISIS targets in Iraq and Syria since October 2015.

RESPONSE BY THE FRENCH AIR FORCE

Two days after the carnage in Paris, i.e. on the evening of November 15 beginning at 1950 hours local time, the French Air Force (FAF) launched a massive air strike by a dozen aircraft including Rafale and Mirage 2000 combat jets against the ISIS elements based in the city of Raqqa, the de facto capital of the organisation in Syria. The targets included a terrorist training camp of the ISIS, a jihadist recruitment centre, an ammunition depot as also a Command Centre that was completely destroyed. In the first five days since retaliatory air strikes were launched by the FAF, as many as 70 missions were flown against ISIS targets. In comparison, in the first two weeks of November 2015, only 50 sorties had been recorded to have been flown on such missions.

As per the French Ministry of Defence, combat aircraft of the FAF were launched from bases in Jordan and the United Arab Emirates. Hollande took the decision in consultation with his national security advisors to employ air power to inflict a crushing blow to the barbaric organisation. In fact France had already been conducting air strikes against the ISIS locations mainly in Iraq.

However, earlier on, France had been attacking oil installations under the control of the ISIS with the aim of adversely affecting its primary source of revenue. Although this action by France did not receive endorsement from the Kremlin, the French Foreign Ministry justified the air strikes on oil installations belonging to the ISIS as an action carried out in self-defence and hence was not only legitimate but also a necessary and an appropriate response to the attacks carried out by the ISIS.

However, compared with the air operations conducted by the FAF in Iraq, aerial action against the ISIS targets in Syria had been of a much lower intensity. As the relationship between France and the regime of Bashar al-Assad in Syria was less than cordial, the French Government was wary of inadvertently strengthening the hand of President Assad by decimating his opponents. The US, on the other hand, had been conducting precision air strikes against the ISIS targets in Raqqa with the help of unmanned combat aerial vehicles (UCAV). In one such air strike in the city of Raqqa just three days before the carnage in Paris, an American UCAV was able to eliminate Jihadi John, a British citizen of Arab origin who had shot into the limelight following release of a gruesome video showing him beheading an innocent peace corps worker in Syria.

The major concern in all aerial strikes against the ISIS targets was the possibility of collateral damage and unintended killing of innocent civilians that would invite adverse reaction amongst the public not only in Iraq and Syria but in the rest of the civilised world as well. However, despite all the concerns expressed and due care exercised, there were a large number of civilian casualties in the air strikes. There was also differing perception on target priorities between Russia and the US which only served to complicate matters further.

THE ISIS CLAIMED RESPONSIBILITY FOR THE ATTACKS WHICH WAS DESCRIBED BY FRANÇOIS HOLLANDE, THE PRESIDENT OF FRANCE AS "AN ACT OF WAR"

RUSSIA ON THE OFFENSIVE

During the week that the French had undertaken air operations against the ISIS, Russia too launched massive air strikes on Raqqa on November 18 but for altogether a different reason. The Russian air strikes were launched in response to confirmation that the group had blown up a Russian civilian airliner that was carrying tourists, over the Sinai in Egypt. The Russian Ministry of Defence released videos showing TU-95, TU-22 and TU-160 bombers taking off from airbases in Syria and Russia and bombing ISIS targets in Syria. President Vladimir Putin vowed retribution against those responsible for blowing up the Russian airliner and killing a large number of innocent civilians.

Russia began air strikes in Syria on September 30 against militant groups opposed to the Assad regime. However, the following day, as many as 30 air strikes were carried out by the Russian Air Force against ISIS positions in Raqqa. Air strikes by Russian aircraft continued throughout October 2015. As per data released by the Russian Ministry of Defence, in the period from September 30 to October 22, 2015, the Russian Air Force carried out 934 sorties and destroyed 819 targets. By November 17, 2015, the Russian Air Force had undertaken a total of 2,300 missions over Syria.

In fact, a new dimension of complexity has been introduced in the situation with the shooting down on November 24 of a Russian Su-24 combat aircraft by Turkey over Syrian territory. This will not only queer the pitch in the relationship between Turkey and Russia, it is symptomatic of the escalating tension between the NATO and Russia. The world is once again inching towards a new Cold War or perhaps even World War III. The downing of the Russian fighter jet is an episode that is likely to impinge on the global power balance. SP

MOMENT TO CHEER: SOLO FLIGHT AVIATOR TRACEY CURTIS-TAYLOR ABOARD BOEING STEARMAN VINTAGE AIRCRAFT AT AIR FORCE STATION HINDON

HISTORY RECREATED

- **Boeing sponsors open cockpit flight from UK to Australia**
- **9,600 km achieved of the 20,800-km journey over 23 countries**
- **Lands at Hindon Air Force Base near Delhi**

BY R. CHANDRAKANTH

PHOTOGRAPH: IAF

ADVENTUROUS BRITISH FEMALE AVIATOR Tracey Curtis-Taylor landed safely at Hindon Air Force Base near Delhi in her classic 1942 Boeing Stearman. Having successfully flown from Cape Town to Goodwood in 2013, Tracey Curtis-Taylor has taken on the challenge of flying her beautiful open cockpit vintage biplane from UK to Australia with stopovers at 50 locations. Curtis-Taylor has undertaken the flight to celebrate the pioneering days of early aviation in the 1920s and 1930s, and especially the achievements of revolutionary British aviator Amy Johnson. A celebrity of her day, Johnson became the first woman to fly solo from Britain to Australia in 1930.

Speaking on arrival in New Delhi, Tracey Curtis-Taylor said, "For my whole life, I have been moved by the achievements of pioneers like Amy Johnson. My own flight to Australia is the realisation of a burning desire to fly my beloved Boeing Stearman Spirit of Artemis around the world following in their footsteps.

"I am delighted to have arrived in New Delhi. The flight has already exceeded all my expectations and delivered unforget-

IAF WOMEN PILOTS CHEERING TRACEY CURTIS-TAYLOR DURING THEIR INTERACTION WITH THE LATTER AT HINDON AIR FORCE BASE

AMY JOHNSON'S HISTORIC FLIGHT

Amy Johnson, CBE (July 1, 1903 – January 5, 1941) was a pioneering English aviator and was the first female pilot to fly alone from Britain to Australia. Flying solo or with her husband, Jim Mollison, she set numerous long-distance records during the 1930s. She flew in World War II as a part of the Air Transport Auxiliary and died young during a ferry flight.

Flying G-AAAH, a Gipsy Moth which was the first of her aircraft named 'Jason', she left Croydon, south of London, on May 5, 1930, and landed in Darwin, Northern Territory, on May 24 after flying 18,000 km. Her aircraft for this flight can still be seen in the Science Museum in London. She received the Harmon Trophy as well as a CBE in recognition of this achievement, and was also honoured with the No. 1 civil pilot's licence under Australia's 1921 Air Navigation Regulations.

Reliving the Moments

Where possible, Tracey will be following Amy's route and reliving the story of her dramatic adventures, reckless bravery and one of the greatest solo achievements in history. It also pays tribute to the many courageous pioneering aviators of the 1920s and '30s who prepared the way for air travel as we know it today. ●

table moments and incredible challenges. From nasty European weather delaying us across Romania to the beauty of flying at 100 feet over the desert, and vibrant cities of India, every moment is an extraordinary experience."

"We are proud to welcome Tracey Curtis-Taylor to India. Boeing's sponsorship of Tracey's adventure stems from an admiration for history and spirit of accomplishment captured in this epic journey, which is an example to a new-generation of aviation enthusiasts," said Pratyush Kumar, President for Boeing India. Tracey's flight in the 1942 Boeing Stearman will reach Australia in early 2016, a year in which we will celebrate our centennial and our own onward journey of achievement into Boeing's second century of aviation," remarked Kumar.

"It's fitting that Tracey landed at Hindon Air Base where the C-17 Globemasters of the Indian Air Force are stationed. This is a unique moment where one of the oldest and one of the newest Boeing aircraft are together at the same base. Tracy's visit to Hindon also highlights the long relationship that Boeing shares with the Indian Air Force which began when the Harvard Trainer was used to train pilots," said Dennis Swanson, Vice President, Boeing Defense, Space & Security India.

BIRD IN A BIPLANE

From October 1, 2015, Tracey Curtis-Taylor is following in the slipstream of aviator Amy Johnson to recreate her pioneering solo flight from Great Britain to Australia. Self-styled 'Bird in a Biplane' Tracey Curtis-Taylor, 53, set off in her 1942 Boeing Stearman Spirit of Artemis aircraft from Farnborough, Hampshire.

- Flight traverses 23 countries
- Covers 20,800 km
- 50 refuelling stops
- 12-14 weeks flight

The route will take her nearly 20,800 km across Europe and the Mediterranean to Jordan, over the Arabian Desert, across the Gulf of Oman to Pakistan, through India and on to Myanmar, Thailand, Malaysia and Indonesia before crossing the Timor Sea to Australia. The flight is expected to take 12 -14 weeks with arrival in Sydney planned for early 2016. The plane will then be shipped to America and flown across the United States to complete the world flight in 2016

A small support crew will travel in a light modern aircraft to record her journey to Australia, and day to day news will be posted on an interactive website.

But she is not unfamiliar with this form of flying. In 2013, she flew 12,800 km solo from Cape Town to Goodwood, West Sussex, to recreate the 1928 flight of Lady Mary Heath. ●

ENCOURAGING WOMEN AVIATORS

Throughout the flight to Australia, Tracey Curtis-Taylor will be stopping in a number of cities to engage with the local communities, with a particular focus on women and women aviators. Commemorating the fact that Amy Johnson was the first president of the Women's Engineering Society, she will promote the achievements of women in every sphere around the world, especially their historic and contemporary role in aviation and engineering. In Delhi, Tracy will interact with women officers and aviators of the Indian Air Force at Hindon Air Force Base. She will also conduct a fly-past in the vintage Stearman airplane.

INSPIRING

These are inspiring aviators and arriving at Hindon there were several who cheered her. Women aviators are not new and their daring aero adventures have warmed the cockles of many a heart. It was befitting moment at the airbase even as the Indian Air Force is contemplating entry of women in the fighter aircraft stream. Such dare devilry helps decision-making. SP

PHOTOGRAPH: IAF

EXPANDING BASE IN INDIA: ROCKWELL COLLINS HAS OPENED A NEW, EXPANDED FACILITY IN BENGALURU. "THE OPENING IS A REFLECTION OF OUR COMMITMENT TO INDIA, AS WELL AS THE INCREASING DEMAND FOR SERVICES FROM OUR INDIA DESIGN CENTRE IN HYDERABAD," SAYS SUNIL RAINA (INSET) WHO TOOK OVER AS THE NEW MANAGING DIRECTOR OF ROCKWELL COLLINS INDIA. "WE CHOSE BENGALURU BECAUSE OF THE HIGH CONCENTRATION OF ENGINEERING TALENT THERE AND THE FACT THAT IT IS AN AEROSPACE HUB," HE ADDED.

ROCKWELL EXPANDS ITS PRESENCE

Rockwell Collins recently announced the new Managing Director. **Sunil Raina**, the new Managing Director, will be leading the company's strategy for continued investment and long-term growth in the country. Raina joined Rockwell Collins' Singapore office in 2005 where he was actively involved in defining the strategies for the company's commercial aviation and services business in the Asia-Pacific region. Previously he led Rockwell Collins' Commercial Systems in India and was successful in developing customer relationships that established Rockwell Collins as the preferred avionics partner for leading airlines in India.

PHOTOGRAPHS: ROCKWELL COLLINS

JAYANT BARANWAL, EDITOR-IN-CHIEF, *SP'S AVIATION*, SPOKE TO SUNIL RAINA, MANAGING DIRECTOR INDIAN SUBCONTINENT, AND ALSO BRIEFLY TO MAUREEN STEVENS, SENIOR COMMUNICATIONS BUSINESS PARTNER INTERNATIONAL ROCKWELL COLLINS. EXCERPTS FROM THE INTERVIEW:

Jayant Baranwal (JB): What is Rockwell Collins' focus in India?
Sunil Raina (Raina): Rockwell Collins is well entrenched in the commercial aviation market as well as the defence market in India. For commercial aviation, we have company's advanced avionics, including communication, navigation, surveillance and information management systems for IndiGo, SpiceJet and Jet Airways, and its Dispatch asset management performance based services for Air India's Boeing 787 fleet. Rockwell Collins advanced avionics, cabin and information management systems is part of most business aircraft throughout the region.

For defence applications the company is focused on communications and avionics solutions that provides enhanced situational awareness solutions for fixed and rotary-wing aircraft, as well as SATCOM, electronic warfare (EW), and networking systems. We are a communications company; we have a new product, TruNet, which we want to bring to India. The product is exportable, ready for transfer of technology and highly customisable. With the multi-waveform capabilities, TruNet is the first system of its kind that enables civil and governmental users to use existing or develop their own proprietary waveform and crypto to meet their sovereign mission needs.

All products that are part of the TruNet network run the exact same waveforms and capabilities, which provides the potential to support countries' civil and military forces by enabling them to 'plug and play' and work seamlessly together. The system's software defined radios (SDRs) provide multiple waveforms, both narrow and wideband, high speed, mobile ad hoc networked communications, point-to-point data, voice and next-generation SATCOM capabilities. Importantly, we are exploring the potential usage of TruNet around the globe and therefore we can say that we are, in fact, offering the first-hand technology to India at this juncture. We will be showcasing this product at Defexpo 2016. We are working with the Electronics Corporation of India Limited (ECIL) on the front of Electronic Counter-Counter Measure (ECCM) radio modules for Do 228 communications and navigation equipment being provided to the Hindustan Aeronautics Limited (HAL). These systems are being used by Indian Navy on their P-8I and helicopters, and also by the Coast Guard and the Air Force. We also provide 721S Fixed Site Ground radio as part of an advanced telemetry system for the Indian Air Force through Park Controls & Communications (P) Ltd.

JB: Tell us something about your facilities in Bengaluru and Hyderabad?
Raina: We aim on how to bring the latest technology in India and have the best partnerships and to grow our engineering facilities and leverage for the existing market and develop for the rest of the world. With the new engineering office opening in Bengaluru, our strategic alliance with Zen Technologies for simulation and training sees a tremendous enthusiasm and boost for the 'Make in India' policy. This includes helping airlines by providing systems for more efficient operations, advancing the military with state-of-the-art avionics and communication technologies, and even helping with passenger flow through airports with more advanced passenger processing systems.

Rockwell Collins' design centre in Hyderabad augments the company's existing engineering capabilities. The India Design Centre (IDC) is dedicated to product development for global markets, with initial work focused on the design of display applications for commercial and military customers and flight management systems. The IDC currently has 630 employees with plans to continue to grow the facility.

JB: What are your expectations from India in the next 10 years?
Raina: With the new government things are happening at a faster pace and moving in the right direction. Government is trying to do some things differently. We are hoping to see something very soon both in civil and defence.

JB: How about Rockwell Collins' involvement in business aviation?
Maureen Stevens (Maureen): We are expanding our Corporate Aircraft Service Program (CASP) to reach both operators seeking a scaled-down programme and those preferring a more encompassing programme. Rockwell Collins has developed CASP Elite, which includes more maintenance services, FMS updates and discounts on international trip support. The company also is offering CASP Essential, aimed at entry-level jet or turboprop operators and with a lower minimum flight hour per aircraft requirement.
Raina: In fact India is doing very well for our CASP programme, last year India has seen the maximum number of takers for this service in the APAC.

JB: You mentioned that your 43 per cent business is outside US. Which markets contribute the maximum?
Raina: Europe and Middle East contribute a major share.

JB: Your take on the Civil Aviation Draft Policy and what is your involvement with MRO?
Raina: More the number of aircrafts means more equipment for us! The government is listening, atmosphere is conducive and the vibes are positive. The Minister and Secretary are very open to ideas and solutions. How it shapes up is to be seen.

We are involved with MROs in two ways – directly, like Air India, where we take up the whole logistics part of the MRO and work on dispatch reliability and the other involvement is as a service. We have an across India coverage on the MRO with Air Works, Indamer, Jetstar and Shaurya.

JB: What is the size of Rockwell's investment on R&D?
Maureen: We contribute 20 per cent to R&D, which is consistent over the years and is pretty large compared to our peers.

WE ARE EXPLORING THE POTENTIAL USAGE OF TRUNET AROUND THE GLOBE AND THEREFORE WE CAN SAY THAT WE ARE, IN FACT, OFFERING THE FIRST-HAND TECHNOLOGY TO INDIA AT THIS JUNCTURE

JB: Do you have some solutions for combating terrorism?
Maureen: Rockwell has the ground-based detection system – Patrol Persistent Surveillance System (PPSS). The PPSS combines sound, vibration and imaging sensors for enhanced situational awareness and the constant monitoring of threats against military bases, forward observation posts and other secure facilities. The PPSS network automatically recognises new sensors 'on the fly,' so there is no need for the operator to manually reconfigure the system. SP

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"THE TICKET PRICE SHOULD BE A PRODUCT OF THE DIRECT SUPPLY AND DEMAND IN THE PREVAILING MARKET AND ANY EFFORT TO DEVIATE FROM THE SAME MAY NOT BE MOST APPROPRIATE."

— VIVEK CHAUDHARY, DEPUTY CEO & CFO, AIR COSTA

EMERGING PLAYERS IN REGIONAL CONNECTIVITY: BY GIVING GREATER EMPHASIS TO REGIONAL CONNECTIVITY, ESPECIALLY TO THE CITY PAIRS OF TIER-II AND -III CITIES, GOVERNMENT IS TRYING TO PAVE THE WAY FOR BALANCED ECONOMIC GROWTH OF THE SMALLER TOWNS ALONG WITH THE MAJOR CITIES AND METRO CITIES. AIR COSTA (SEEN HERE) IS MAKING ALL THE EFFORTS IN TAKING LEAD TOWARDS THE REGIONAL CONNECTIVITY. AIR PEGASUS (FACING PAGE) IS ALSO EMERGING AS A STRONG ENTRANT INTO THE SECTOR.

CAPPING OF FARE IS "NOT" GOOD

While broadly welcoming the revised draft of the National Civil Aviation Policy, Air Costa and Air Pegasus have suggested that the government should not cap air fares in a free market economy

BY R. CHANDRAKANTH

THE REVISED DRAFT NATIONAL Civil Aviation Policy (NCAP) has got a mixed response from the regional aviation sector. Overall, the aviation industry is happy that, at least, there is a government which is thinking in the right direction and is making efforts accordingly. The fact that the policy is laying emphasis on regional connectivity is the most welcoming feature, if India wants to be among the top three aviation economies of the world. The revised draft will be coming up before the Union Cabinet in early December and the Ministry of Civil Aviation (MoCA) has sought response/comments from the industry as to further fine-tune the policy.

FARE CAPPING SHOULD GO

One of the most important suggestions that the regional airliners are making is that the capping on fares should be done away with in a free market scenario. The point being made is that the limit on fare per passenger per hour to ₹2,500 has not gone well with the airlines. The question that is going to crop up is when a flight between two regional destinations under regional connectivity scheme (RCS) has a flying time of 1:05, will the cost be double that of ₹2,500 per passenger as it goes beyond the one hour stipulation? Similarly, there are questions being asked on how two different types of aircraft – a turboprop and a regional jet with different cost of operations – are being bracketed under one flat rate of ₹2,500 per passenger per hour.

AIR COSTA PITCHES FOR MARKET DRIVEN TICKET PRICING

The Deputy CEO and Chief Financial Officer of Air Costa, Vivek Choudhary, said: "After many years a definitive policy in the aviation sector is emerging which is welcome. The draft policy does focus on opening new windows of opportunity for expansion/ growth both in the domestic and international markets and we

PHOTOGRAPH: AIR COSTA

"THERE APPEARS TO BE NO REALISTIC YARDSTICK TO MEASURE THE VIABILITY GAP, AS TO THE PROPOSED VGF (VIABILITY GAP FUNDING) TO BRIDGE THE VIABILITY BETWEEN ₹2,500 AND ACTUAL COST OF OPERATION FOR THE AIRLINES."

— SHYSON THOMAS, MANAGING DIRECTOR, AIR PEGASUS

PHOTOGRAPH: AIR PEGASUS

believe the demands of the sector will be met." Choudhary adds: "While the policy aims to improve connectivity to small towns in India by developing no-frills airports and encouraging airlines through concessions and support of the government's through the viability gap funding, capping of fares may not be the most productive in a free market economy. The ticket price should be a product of the direct supply and demand in the prevailing market and any effort to deviate from the same may not be most appropriate. Alternate methods of providing further subsidies and waivers to regional airlines or to specific airports in smaller cities to help reduce cost of operation of the airlines may encourage airlines to offer a greater number of seats at a reasonable price."

STRENGTHEN OPERATIONAL PROCESS

The Air Costa CFO who was recently made Deputy CEO further said: "Also emphasis should be laid on further strengthening operational process and procedures in line with the Federal Aviation Administration (FAA) guidelines." He said that the support on MRO and maintenance activities is welcome. "We believe this is a step in the right direction and the policy should only further strengthen the aviation sector in India from here on."

AIR PEGASUS SUGGESTS REDUCED AIRPORT CHARGES

The Managing Director of Bengaluru-based Air Pegasus, Shyson Thomas, said: "The capping of ₹2,500 for the one hour short haul flight though looks attractive from the passenger's point of view, it may not be practically viable from the airline operators point of view. For example, if a regional airline is asked to operate from a costlier airport like Bengaluru run by BIAL (Bangalore International Airport Limited), it may have to shell out almost ₹1,800 out of that ₹2,500 to such airports in the form of various charges. The government should take initiative to open up the closed airports like the HAL airport in Bengaluru and the Begumpet airport in Hyderabad for regional airlines."

Thomas said: "Though the policy mentions about making inoperative airports as operational low-cost airports, it is still silent on the fate of the closed airports in the country. There appears to be no realistic yardstick to measure the viability gap, as to the proposed VGF (Viability Gap Funding) to bridge the viability between ₹2,500 and actual cost of operation for the airlines. Each airline will have their own costing to arrive at their actual cost of operation and ASKM."

SELF-GROUND HANDLING

One major good relief under the policy is all about allowing self-ground handling by the airlines in all airports. Currently, the airports such as BIAL not allowing few airlines to do the self-ground handling and compelling them to take the services only from their concessionary at exorbitant prices with their 200 per cent margin added on to it, coupled with 14.36 per cent service tax, and 13 per cent revenue sharing with the BIAL etc, has resulted in costs skyrocketing. Same is the case with catering upliftment with their own concessionary which does not make business sense for some operators who can do these jobs themselves.

FOCUS ON TIER-II AND -III CITIES

"It is generally much encouraging that the government has initiated very good boost to improve regional connectivity in India. The Indian aviation was hitherto concentrating only on major cities and metros, and conveniently neglected regional connectivity to Tier-II and -III cities, where the passengers have been crying out for connectivity. By giving greater emphasis to regional connectivity, especially to the city pairs of Tier-II and -III cities, this government is trying to pave the way for balanced economic growth of the smaller towns along with the major cities and metro cities."

SALIENT FEATURES

Thomas added that the revival of un-served or under-served airports, concessions by different stakeholders, cost-effective security solutions by the Bureau of Civil Aviation Security (BCAS) and state governments, the proposal to bring down the VAT on ATF to 1 per cent, etc., are salient features of the revised draft

REGIONAL CONNECTIVITY POINTERS

- The Regional Connectivity Scheme (RCS) will come into effect from April 11, 2016.
- The Ministry of Civil Aviation (MoCA) will target an all-inclusive airfare not exceeding ₹2,500 per passenger, indexed to inflation for a one-hour flight on RCS routes. (Air Costa is objecting to this capping.)
- This will be implemented by way of:
  - Revival of un-served or under-served aerodromes and airstrips.
  - Concessions by different stakeholders:
    - Viability Gap Funding for scheduled commuter airlines
    - Cost-effective security solutions by the Bureau of Civil Aviation Security (BCAS) and state governments.
- Currently around 75 out of 476 airstrips/airports have scheduled operations. Revival of airstrips, depending on demand, as no-frills airports will be done at a cost not exceeding ₹50 crore, mostly through the Airports Authority of India (AAI). Requirement of 12 per cent project IRR will be relaxed for revival of these airports, wherever the airport is under AAI control.
- RCS will be made operational only in those states which reduce VAT (value added tax) on ATF (aviation turbine fuel) at these airports to 1 per cent or less.
- For customs duty SCA will treated at par with scheduled commercial airlines provided they do not undertake any charter carriage.
- State government will provide free land and multi-modal hinterland connectivity (road, rail, metro, waterways, etc) as required.
- For 10 years from the date of commencement of flight operations under RCS:
  - There will be no airport charges levied on SCA for their operations under RCS.
  - Service tax on tickets under RCS will be exempted.
  - State government will provide police and fire services free of cost. Power, water and other utilities will be provided at substantially concessional rates.
  - ATF drawn by SCA's from the Regional Connectivity Scheme airports shall be exempt from excise duty.
  - Viability Gap Funding indexed to ATF prices and inflation will be provided for a particular route, on a competitive bidding basis if necessary, for a period of 10 years from commencement of operation.
- VGF will be shared between MoCA and the state government in the ratio of 80:20.
- MoCA's share of VGF will be provided through the Regional Connectivity Fund (RCF).
- RCF will be funded by a levy of 2 per cent on all domestic and international tickets from January 1, 2016, onwards under Clause 5(2)(ab) of the Aircraft Act, 1934. The RCF levy will be applied on all routes other than Cat IIA routes and RCS routes.
- Proceeds from auctioning of additional bilateral rights will go to RCF.
- The RCF will be collected and operated by AAI or any other entity identified by MoCA.
- SCAs will be provided easy options for entry into and exit from RCS.

civil aviation policy. The other outstanding features like exemption of service tax on tickets, and NIL service charges levied on Schedule Commuter Airlines, etc, are really very encouraging.

However, he mentioned that there is need for clarity on the 5/20 Rule. "The Rules put forth like earning 600 DFC etc., are still unworkable and seems to be unachievable at any given point of time."

MAIN CARRIERS MAY ENTER REGIONAL FRAY

With the policy push for regional connectivity, there is a feeling that mainline carriers may enter the regional space. Credit rating agency, India Ratings and Research (Ind-Ra) believes that any significant improvement in the regional market will result in full service carriers (FSCs) and low-cost carriers (LCCs) entering into the segment aggressively, putting pressure on the profitability of regional operators.

300 MILLION TICKETS, HUMONGOUS OPPORTUNITY

All said and done, the government has proposed to take flying to the masses by making it affordable. And the draft policy puts forth these figures – for example, if every Indian in middle class income bracket takes just one flight per annum, it would result in a sale of 300 million tickets, a big jump from the 70 million domestic tickets sold in 2014-15. This will be possible if the air fare, especially on the regional routes, is brought down to an affordable level. The reduction in costs will require concessions by the stakeholders, primarily the Central and state governments and airports.

The vision of the policy is to create an ecosystem to enable 30 crore domestic ticketing by 2022 and 50 crore by 2027. Similarly, international ticketing is to increase to 20 crore by 2027. The mission of the policy is to provide safe, secure, affordable and sustainable air travel with access to various parts of India and the world.

Among other aspects, the draft policy lays emphasis on regional connectivity as can be seen from the stated objectives. The policy objectives are:

- Ensure safe, secure and sustainable aviation industry through use of technology and effective monitoring.
- Enhance regional connectivity through fiscal support and infrastructure development.
- Enhance ease of doing business through deregulation, simplified procedures and e-governance.
- Promote the entire aviation sector chain: cargo, MRO, general aviation, aerospace manufacturing and skill development.

CABINET DECISION IN DECEMBER

The Ministry of Civil Aviation is awaiting response to the revised draft from all stakeholders. Based on the request of the Federation of Indian Airlines (FIA) – representing IndiGo, Jet Airways, SpiceJet and GoAir – the Ministry has extended the date for comments/suggestions to November 30 from November 21. FIA had sought more time stating that the proposals had 'far-reaching ramifications on the sector' and it had to carefully study the same before responding. With regard to the three regional airliners, they are yet to form an association as they themselves are too new in the business (though Air Pegasus has parent linkages with ground-handling operations).

Nevertheless, the airlines have reportedly raised some of these issues while broadly welcoming the policy. It is said that the policy would be sent for the Union Cabinet's approval in December and the final policy should be out in 2016. Will 2016 set the aviation sector on a new path, it appears so. The government seems proactive and needs requisite inputs from the industry and experts. SP

EMIRATES SKYCARGO IS THE LEADER IN THE INDIAN AIR CARGO MARKET AND IT OPERATES TWO FREIGHTER SERVICES A WEEK FROM INDIA

FREIGHT WITH CHALLENGES

The draft National Civil Aviation Policy has outlined several measures to prop up the sector as it believes that promotion of air cargo is a key objective of the government, given its importance from a 'Make in India', e-commerce and exports perspective

BY R. CHANDRAKANTH

CARGO DEMAND IN INDIA is expected to boost the airfreight market to 2.8 million tonnes by 2018 with the present 5.5 per cent compounded annual growth rate, according to Frost & Sullivan, market research consultancy firm. The report indicates that most of this growth, however, will benefit foreign airlines which are the primary carriers of Indian export goods. Efforts are on to set right this anomaly of domestic carriers lagging behind and it is hoped that the draft National Civil Aviation Policy addresses the concerns of the air cargo sector.

With relaxation of regulations in foreign direct investment (FDI) in the aviation sector, the possibilities of international trade increasing are enormous and air cargo segment will be a major beneficiary. Frost & Sullivan's Srinath Manda has said that major policies fuelling market growth include the allowance for 100 per cent FDI in existing airports and under automatic routes, as well as 100 per cent tax exemption for airport projects for the next 10 years.

ECOSYSTEM NEEDED

The report said that India's merchandise export and import activity grew by an annual rate of 9.5 per cent, on average, from 2009 to 2013, which helped drive the nationwide demand for air cargo to 2.26 million tonnes in FY 2014. This growth could be certainly better but for the many issues that are holding back the sector. There is a perennial problem of lack of dedicated airfreight warehousing facilities at major airports. As a result, most warehousing facilities that exist cater to international, rather than domestic, cargo. Restrictions imposed on providing licences to operate bonded warehouses has been causing severe capacity constraints and impeding the air cargo market.

PHOTOGRAPH: WWW.DUBAIAIRPORTS.AE

GULF CARRIERS DOMINATE

As mentioned the Middle East airlines have captured the Indian international air cargo market. According to the International Air Transport Association (IATA) Industry Forecast 2014-18, India has emerged as the second fastest growing air cargo market after the Middle East and is expected to grow at a compound annual rate of about seven per cent over the next five years. The Middle East airlines with their global connectivity have dominated the Indian air cargo market. Emirates SkyCargo is the leader. Emirates operates 185 weekly passenger wide-bodied flights serving 10 destinations across India providing the Indian market a pan-India business opportunity for exports and imports. In addition, it operates two freighter services a week from India; one weekly turn-around freighter B777F service from DWC to Mumbai and back and the second B777F service operates from DWC to Chennai and onwards to Hong Kong. The other Gulf carriers—Saudia Cargo, Qatar Airways Cargo, and Etihad Airways Cargo are aggressive in their air cargo operations.

E-COMMERCE, CHANGING DYNAMICS

The good news, however, is that the e-commerce sector is driving air cargo business to new heights for domestic airliners. "With e-commerce expanding and 'Make in India' initiative fuelling growth of domestic cargo, in addition to access to over 100 destinations through Etihad's Abu Dhabi gateway, Jet has the opportunity to do well on both origin-destination and transshipment cargo," said Bharat Thakkar, past President of Air Cargo Agents Association of India and Joint Managing Director of Zeus Air Services.

If the domestic carriers and also the airports have to benefit from the wave of economic growth in India, then a lot needs to be done on the part of the government in terms of policies and infrastructure creation.

DRAFT POLICY – FEATURES

The draft National Civil Aviation Policy has outlined several measures to prop up the sector as it believes that promotion of air cargo is a key objective of the government, given its importance from a 'Make in India', e-commerce and exports perspective. Revenue from air cargo helps airlines subsidise the cost of passenger tickets and take flying to the masses.

The draft policy acknowledges that air cargo has a high employment potential, especially for semi-skilled workers. Currently air cargo volumes in India are extremely low as compared to other leading countries due to high charges and high turnaround time.

The following framework is expected to ensure growth of air cargo business:

- Air cargo will be accorded 'infrastructure' status if co-located with an airport and will be eligible for Sec 80IA benefits.
- The Air Cargo Logistics Promotion Board (ACLPB) has been constituted to promote growth in air cargo by way of cost reduction, efficiency improvement and better inter-ministerial coordination. The Board and the industry will submit a detailed action plan after stakeholder consultation, with the objective of reducing dwell time of air cargo from 'aircraft to truck' to below 24 hours by December 31, 2016, and to 6 hours by December 31, 2017.

Paper-less air cargo

- ACLPB's action plan should ensure a shift to paper-less air-cargo processing by April 1, 2017.
- ACLPB will develop Service Delivery Modules for all elements of the air cargo value chain – airlines, airports, terminal operators, Customs House Agents (CHA), freight forwarders, and government agencies like Customs, Central Industrial Security Force (CISF), quarantine officers, etc.
- The government will streamline and simplify customs procedures.
- The Bureau of Civil Aviation Security (BCAS) will continuously review and simplify security procedures for air cargo in light of the changing business dynamics and evolving technology, while ensuring adequate checks and balances.
- Advanced Cargo Information (ACI) system will be implemented by April 1, 2016, to facilitate faster processing by customs, security agencies and terminal operators.
- The Ministry of Civil Aviation (MoCA) plans to leverage the untapped trans-shipment opportunity. The ACLPB will propose specific action steps to promote trans-shipment and the same will be monitored by MoCA on a bimonthly basis.

Increased airport space for cargo

- The space allocated for cargo on the air-side and city side at most Indian airports is inadequate. ACLPB will lay down norms for space allocation for air cargo for all greenfield airports. The action plan for space-augmentation at existing airports will be developed by ACLPB on a case by case basis.
- The government will endeavour that all relevant Central Government authorities are available under one roof, at the cargo terminals. These include the Ministry of Finance (customs), Ministry of Environment and Forests (wildlife clearance for handicrafts, etc), Ministry of Chemicals and Fertilisers (drug controller), Ministry of Agriculture (plant and animal quarantine), Ministry of Culture (Archaeological Survey of India) etc. Clearances will be given promptly and online after necessary checks.
- The government has commenced 24 x 7 customs operations at several airports. However, it has not been utilised optimally by industry. ACLPB will work closely with industry and propose action steps to spread out cargo handling round the clock.
- ACLPB will promote global good practices like free-trade warehousing zones (FTWZ), air freight stations, bonded trucking, dedicated cargo airports, etc.
- Freighter aircraft suffer from low priority accorded in terms of time slots and parking bays. ACLPB will lay down norms to address the issue.
- ACLPB will lay down specific norms and penalties to minimise pilferage, mishandling and damage of cargo.
- ACLPB will work with the Airports Economic Regulatory Authority (AERA) and the Airports Authority of India to ensure that user charges at Indian airports are competitive vis-à-vis competing aviation hubs. In particular for the non-metro airports, the lease and other fixed charges levied by AAI on cargo facility will be kept low so that it does not become an entry barrier.
- The government will consider providing incentives for skill development of people employed in the air cargo value chain.
- AAI will be permitted to provide space on 10-year lease to operators of express cargo and freighters who may then develop dedicated infrastructure to improve their operational efficiency.
- MoCA will encourage development of cargo-villages near airports.

It remains to be seen what the industry is going to suggest and how the final policy will emerge as to prop up a sector which has such a crucial role to play in India's emergence as an economic powerhouse. SP

FIRST-HAND ACCOUNT

NAVIGATING THE MINEFIELD OF ACQUIRING BIZJET

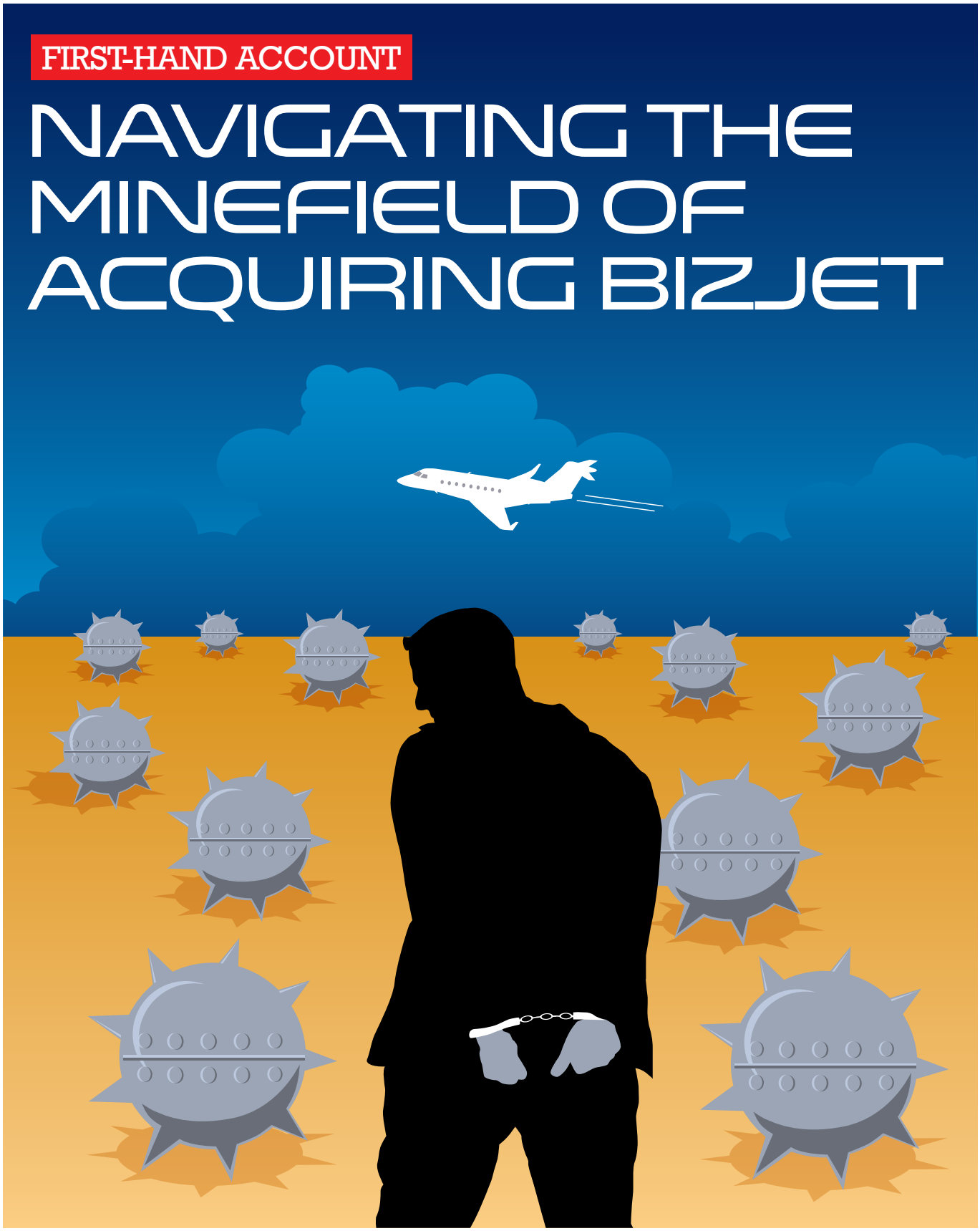


ILLUSTRATION: ANOOP KAMATH

"This is one of the most traumatic experiences that I have undergone, and I have sworn that I will never make this mistake again."

BY ROHIT KAPUR

NOTHING IS MORE TRAUMATIC for a potential aircraft operator than going through the process of regulatory nightmare of first acquiring and then getting clearances to operate an aircraft in India. The process can take anything from 12-18 months, from the time you decide to buy an aircraft or helicopter, till the time you actually start flying one. This is not for the weak hearted. In fact, the process probably would make a good case study in one of the IIMs or the Harvard Business School, to bring out why the mission of 'Ease of Doing Business' in India, especially in the aviation industry, will never succeed, unless a thorough review of the entire process is carried out and streamlined.

So, this is how it goes presently. You are a potential aircraft/helicopter buyer for the first time, as you have realised that your business will grow manifold in case you have the flexibility and mobility to travel as per your convenience in your private aircraft. You have finalised your aircraft type, and have also negotiated the price with the original equipment manufacturer (OEM), who is ready to deliver you the aircraft within four to five months, and he needs a 10 per cent deposit to block your serial number, as any manufacturer will want. You approach your bank to do the needful. Hang on, the bankers tell you that you cannot remit more than $1,00,000 as advance without a no objection certificate (NOC) from the Ministry of Civil Aviation (MoCA) / Director General of Civil Aviation (DGCA). Considering that you are buying an aircraft worth about $10 million, you actually need to pay $1 million to the OEM. Well, you go back to the OEM and tell him that the Indian system does not allow more than $1,00,000 to be wired, so he will have to do with One per cent deposit, instead of the 10 per cent that he needs. The OEM is not happy, but accepts since he now understands that this is how it works in India.

SECURITY CLEARANCE

So now you start the process of getting the famous NOC from MoCA/DGCA. For first time applicants, Ministry of Home Affairs (MHA) requires that all directors of the company acquiring the aircraft need a security clearance. This is a process which can take anything from three to four months, as there are various wheels within the MHA which need to turn before the directors are security cleared. God bless you in case any of your director is a foreign national, you might as well sack him, or stop dreaming about buying your aircraft! The process is completely opaque, with no way of knowing where your security clearance process is at the moment, and when it will be cleared. It is quite possible that after four months you might get a simple one-line stating that your director X has not been security cleared by MHA...no reasons... so please start the process again after sacking director X and hiring director Y in his place!

So four months down the line, you are security cleared, ready to move to the next step to obtain the NOC from the DGCA. You also need to make sure that you have to get a valid parking permission from your airport for your new aircraft. If you are in one of the metros, forget getting this permission from your local airport manager. Somehow you manage to get a letter from the Airport Director of Raipur, who is a friend of yours, that he will allow you to park your aircraft at his airport. Who cares that you need your aircraft in Delhi, and it's going to be parked at Raipur! The letter is essential to take you to the next step.

FIVE-STAGE PROCESS

The DGCA now sets up a project team to oversee your aircraft acquisition, which is a five-stage process. These are:

- Pre-application
- Formal application
- Document evaluation
- Demonstration and inspection and
- Certification

The team comprises members from Flight Inspections Directorate (FID), Airworthiness, Air Safety and Air Transport. An initial pre-application meeting is called for by the team to meet you, and see whether you look affluent enough and capable of buying an aircraft. So you dress up in your smartest suit, and go to the DGCA for this meeting. After a few hours of this meeting, you are left wondering as to why you were called. The only reason for the meeting was that they wanted to explain to you the process, and the pain that you are about to endure, and see if you are strong hearted enough to go through it. Well, I'm still hanging in there!

YOU ALSO NEED TO MAKE SURE THAT YOU HAVE TO GET A VALID PARKING PERMISSION FROM YOUR AIRPORT FOR YOUR NEW AIRCRAFT. IF YOU ARE IN ONE OF THE METROS, FORGET GETTING THIS PERMISSION FROM YOUR LOCAL AIRPORT MANAGER

RIGMAROLE AT THE BANKS

Well, the NOC arrives after a few trips to the DGCA and a few heartburns, a few weeks later. The OEM is breathing down my neck for his 10 per cent payment, and is probably tracking my NOC even more than my team. It's six months since I booked the aircraft, and he still has only One per cent of the payment. He wants to

SET IT RIGHT: IF THE POLICIES AND DIRECTIONS ARE PLACED RIGHT, BUSINESS AVIATION WILL GROW EXPONENTIALLY

PHOTOGRAPH: DASSAULT AVIATION

be paid now, as the aircraft is ready for delivery, actually. I go to my bankers with the NOC, and ask them to pay the first and the second instalment of the payment together, amounting to 70 per cent of the value, as the aircraft is almost ready for delivery. Just wait...my banker tells me that they need to approach the Reserve Bank of India (RBI) for making this payment, as this is advance payment, and it needs RBI clearance. Well, well, I tell the poor OEM that there is still some grief left for him. Applications are made, and RBI takes another four to six weeks to clear this payment. By this time, the OEM is ready to kill me with the first AK-47 he can lay his hands on, but he has to smile everytime he meets me. After all, I am the customer.

CAP 3100

Simultaneously, my process with the DGCA continues. They have a process called the CAP 3100 which I have to go through. All I know is that process was imported from Sri Lanka, but why...no one seems to tell me! It involves submitting about 25 manuals. There is 267-page guideline on how to go about the CAP 3100. Every stage involves the DGCA project team to review your documents, and giving you the feedback for the same. It requires a few hundred trips to the DGCA, and probably the same to your GP, to get your blood pressure checked after every trip.

BY THIS TIME, THE OEM IS READY TO KILL ME WITH THE FIRST AK-47 HE CAN LAY HIS HANDS ON, BUT HE HAS TO SMILE EVERYTIME HE MEETS ME. AFTER ALL, I AM THE CUSTOMER.

"This is for your own good" you are told by stern looking FOIs, after ever trip. I hear you. I wish they would also think of my good when I pay the monthly interest on the loan amount that I have taken for an asset which is nowhere near to making itself useful. Besides, the monthly salaries to the staff... the pilots, QC, CAM, Safety Officer, Operations Manager, etc., continue to drain my finances. But I don't care, since the DGCA process is for my own good, and needs to be done!

DGFT CLEARANCE

Three months have passed since my initial NOC. The DGCA document evaluation process is progressing well...the manuals have been reviewed once and corrections made. The DGCA is now ready to give me the NOC for import. However, since I plan to operate the aircraft in the private category, I still need an NOC from the Director General of Foreign Trade (DGFT) before I can import the aircraft. I am told that the DGFT committee sits only once in a month to review all cases of aircraft import, the third Thursday of the month. Was that only yesterday? So now I have to wait for another month before it is approved. Well, how does another month matter, we are already eight months down. One more month, and we would have actually produced a baby from conception in the same time.

INDIAN CERTIFICATE OF AIRWORTHINESS

So, all set. The big day. All permissions in place, my new aircraft is landing in Delhi today, being flown by a ferry company who will deliver it to India under the US registration. It lands, and I'm there to see it. One look and I feel that probably the wait was worth it. I am told the import process will take two days. Great, so I can plan my first trip on Friday, today being Tuesday. Boss hang on, I'm told. We now need to de-register it and get it into Indian registration with Indian Certificate of Airworthiness and Certificate of Registration. Back with the DGCA for the balance of the CAP 3100 process, that is the demonstration and the inspection phase. Here we go again. First the Aero Mobile Licence, then the C of R, the C of A, the table top exercise and finally the proving flight. Maybe two months, if you are lucky, and another two, if you are not. After all, the DGCA is a busy organisation, and we do need to see the availability of FOIs, AW officers, etc. It's still on track. However, there is a minor problem. The pilots who had undergone training on specific type at flight safety to fly this aircraft, suddenly tell me that their currency has expired, since it is six months over since they had undergone the training. So what do I need to do? Send them back to US for recurrent training of course. Besides the cost, it's going to take them a month to do so. No worries, please do your recurrent while the DGCA does my table top exercise... another month before I fly. It is only 14 months since I started. I was told it can take 18, so I'm good for another four.

TRAUMATIC EXPERIENCE

So all those of you who found the above experience funny, I can assure you, as the operator of this aircraft, I do not see any humour in this. I have aged 10 years, and now have a high BP, which even my business never gave me over all these years. This is one of the most traumatic experiences that I have undergone, and I have sworn that I will never make this mistake again. What is wrong with going by train or commercial flights and why do I need to buy one?

But I do have a few questions to ask my friends in the Ministry/DGCA, and other authorities who have created this process. These are:

- Why do I need a security clearance to buy an aircraft? I am the Director of a company, I have a DIN, and I have a valid passport which was given to me after due security clearance? Is buying an aircraft such a sensitive purchase that I can be a threat to national security?
- If you still insist that I need a security clearance, why cannot you set up fast-track system for it, and allow the DGCA process to work simultaneously? Even 'Tatkal' passports are given provisionally, and security clearances can be done later on. Since the process is long anyway, can't it be done in a way, that my security clearance is required to be submitted before my aircraft is finally imported?
- Why do you need valid parking permission from any airport? This is a farce. General Aviation (GA) aircraft are not like scheduled airlines and do not need night parking bases. They operate on requirement, from anywhere in the country and overseas, and do not need to have parking permissions, as scheduled airlines do.
- The DGCA process is too long. I can assure you that 80 per cent of CAP 3100 is 'Cut and Paste' from other CAP 3100s. Can we not avoid wasting time in reviewing this, and only focus on the balance 20 per cent which is specific to my operation? I have not understood the purpose of some manuals, like the FDTL Manual. There is a CAR on FDTLs, I have to follow it, or be penalised...why do I need a manual?
- What's with the proving flights? This is specific to scheduled airlines, wherein they have to prove that they are capable of operating at particular routes. This is a business aircraft, for God's sake, and we do not need to actually fly an aircraft to show you that we can fly it. Plus it costs us money to do so.
- Why can't the DGFT give clearances on file, rather than wait for monthly meetings. And if committee meetings are a must, they must be held every week, and not once a month.
- While we fully respect RBI and its desire to prevent money laundering, the whole process of only $100K as advance needs a review. In today's world, banks should be allowed to transmit up to 10 per cent of aircraft value, subject to a maximum of $5 million without any reference, once they have satisfied the bona fides of the customer, and the valid agreements. It anyways comes with an undertaking from the owner that he will make sure that the entire money is refunded, in case the aircraft is not imported within a stipulated period.

THE REGULATORY AUTHORITIES NEED TO UNDERSTAND THE COMMERCIAL CONCERNS AND THE FINANCIAL LOSSES OF AIRCRAFT OWNERS AND OPERATORS

VALUE THE TIME THAT FLIES

To conclude, the regulatory authorities need to understand the commercial concerns and the financial losses of aircraft owners and operators. While no one is suggesting that safety standards should be diluted, a number of processes need to run concurrently to reduce the time frame. We need to ensure:

- Permission to buy an aircraft be given within four to six weeks of the application.
- Security clearance should be given automatically for people holding valid Indian passports. For the others, it should be given provisionally to continue the process, and to be available before final import of the aircraft.
- Parking permissions at airports should not be required for general aviation aircraft. They should only need to produce a certificate from a certified MRO stating what will be their maintenance base.
- Transfer of money up to 10 per cent of the aircraft value (limited to $5 million) be allowed in the automatic route without reference to the RBI, accompanied by a CA certificate and against firm contract.
- For additional amounts of money, the RBI to process the application within two weeks of the initial permission given by the DGCA.
- DGCA Cap 3100 process should be completed in four weeks maximum—two weeks for document evaluation and another two weeks after aircraft lands for demonstrations and inspections. Avoid personal contact as far as possible. Most interaction online.
- DGFT application and approval should be online.
- No requirement for proving flights for NSOP. This is specific to scheduled airlines.

I can assure you that there is a huge potential out there, if the above is implemented. SP

The author is an operator of business aircraft. He has been intensely involved in the aircraft acquisition process.

HOT SELLING: EMBRAER PHENOM 300

HEADWINDS STILL

Business jet shipments increased to 722 units, an increase of 6.5 per cent from the 678 business jets shipped in 2013

BY R. CHANDRAKANTH

THE GOOD NEWS IS that business jet sales are on the rise, driven by positive market sentiments. The North American market continues to dominate the business jet market with 52.2 per cent of the sales, followed by Europe at 19.5 per cent. In Asia-Pacific, it was the turboprop market that seemed to be doing well. The General Aviation Manufacturers Association (GAMA) has released the worldwide 2014 year-end aircraft billing and shipment numbers which indicates that general aviation (GA) airplane shipments rose 4.3 per cent from 2,353 units in 2013 to 2,454 units in 2014. Billings for GA airplanes worldwide increased to $24.5 billion, up 4.5 per cent from $23.4 billion in 2013. The fixed-wing billings increase marks the second largest sales value recorded after 2008, when billings were $24.8 billion.

MIXED RESULTS

GAMA President and CEO Pete Bunce reported that shipments of piston-engine airplanes were positive, rising 9.6 per cent in 2014. Business jet shipments rose 722 units, an increase of 6.5 per cent from the 678 business jets shipped in 2013. Turboprop shipments declined, however, by 6.5 per cent to 603 units. Rotorcraft shipments slowed for both piston and turbine aircraft compared to the previous year. A total of 230 rotorcraft and 778 turbine rotorcraft were shipped in 2014, which is a 31.3 per cent and a 20.3 per cent reduction, respectively, from the strong deliveries posted in 2013.

"The mixed results among segments indicate that the general aviation manufacturing industry is still facing headwinds given the tepid US economic recovery and the political and economic uncertainties in Europe," GAMA President and CEO Pete Bunce said. "The 2014 year-end numbers make crystal clear the need for GAMA's priorities in 2015 – specifically, reform that facilitates the introduction of new safety-enhancing products to market, reduces the inconsistent application of regulations, and strengthens the global engagement and cooperation among aviation authorities. We will continue to press forward on these issues, especially as the Federal Aviation Administration (FAA) reauthorisation moves forward this year in the US Congress and major general aviation regulatory change takes shape in Europe."

In the business jet segment, Bombardier had good outing in 2014, registering an increase by 24 units from the previous year,

PHOTOGRAPH: IEMBRAER

YEAR-END SHIPMENTS OF AIRPLANES MANUFACTURED WORLDWIDE

	2013	2014	Change
Turboprops	645	603	-6.5%
Business Jets	678	722	+6.5%
Total Shipments	2,353	2,454	+4.3%
Total Billings	$23.4B	$24.5B	+4.5%

Source: GAMA

PHOTOGRAPH: GULFSTREAM

followed by Textron Aviation (Cessna) which saw 20 units more sold in 2014. The following table shows the mixed performance of aircraft manufacturers in the business jets category. Bombardier topped the sales figures and became the world's largest business jet manufacturer in the fourth quarter of 2014, though it is facing delays both in its business jet and flagship CSeries commercial jet programmes. After about two years of activity, Bombardier shipped 78 planes valued at $2.7 billion and Gulfstream delivered 42 planes worth $2.2 billion. The Canadian airplane manufacturer delivered 204 aircraft valued at $7.56 billion, up from $6.3 billion in 2013. It shipped 80 large Global aircraft, 90 Challengers and 34 Learjets in 2014. Gulfstream shipped 150 planes worth $7.78 billion, up from $7.35 billion in 2013.

According to GAMA, the sales figures are Bombardier (Challenger 300/350) – 54 sold; Global 6000/Express – 80 sold; Embraer sold 73 Phenom 300; Gulfstream sold 117 units of G300/350/400/450/500/550/650 and Textron Aviation sold 46 units of Cessna Citation M2. GAMA noted that this Eclipse re-entered the market. The Eclipse 500 had proved popular in the very light jet market upon its introduction in 2006, but Eclipse Aviation declared bankruptcy in 2009. Eclipse Aerospace (now renamed ONE Aviation) bought the company's assets and have brought the updated **Eclipse 550** back to airplane buyers. It is the only twin-engine light jet priced below three million dollars and it only burns about 54 gallons an hour, so has low operating costs. It sold 12 units in 2014, having drawn a blank the previous year.

Embraer's Phenom 300 continues to grow in popularity as it has done since its introduction in 2009. Several fractional operators include this light jet in their fleets. The large-cabin private aircraft remained popular, proving to be the top sellers for Gulfstream and Bombardier. In its second year of sales the **Citation M2** achieved a very respectable 46 unit shipments. This light jet is competitively priced at slightly over $4 million. Turboprop sales declined slightly in both North America and Europe. However, the increased market share elsewhere, particularly in the Asia-Pacific market, made up for most of this. A total 603 turboprops were shipped worldwide in 2014 compared to 645 in 2013. The top sellers were the **Pilatus PC12** with 66 units, **King Air 350** with 71 units and the **Cessna Grand Caravan** with 81 units.

SHAKY 2015

GAMA recently released the second quarter 2015 general aviation aircraft shipment numbers. Industry airplane shipments fell 9.1 per cent to 1,015 units for the first half of the year, and airplane billings declined 4.6 per cent to $10.4 billion, compared to the same period a year ago. Rotorcraft shipments decreased, from 502 units to 447 units, and billings were down an estimated 16.8 per cent to $1.9 billion for the first six months.

The number of piston airplanes delivered fell 11.8 per cent, from 526 units to 464 units. Turboprop shipments also declined 9.9 per cent to 246 airplanes. Business jet manufacturers shipped 305 airplanes compared to 318 airplanes last year, a drop of 4.1 per cent. Piston rotorcraft declined to 130 shipments while turbine rotorcraft dropped from 358 units in 2014 to 317 units in 2015, an 11.5 per cent decline.

"While the second quarter generally improved over the first, our industry is still being buffeted by volatile global markets and contraction within the energy sector," Pete Bunce said. "Robust new product development continues in each of our member companies, accentuating the need for streamlined certification processes and efficient validation mechanisms between regulatory authorities. Finally, fair global competitiveness for all GAMA members rests on the need for a global level playing field. Therefore, Export-Import Bank reauthorisation remains a key priority for manufacturers."

The general aviation industry shipped 678 aircraft in the first three months of the year for a total value of $5.3 billion.

SALE OF BIZJETS

Manufacturer	2014	2013	Change
Airbus	5	6	(1)
Boeing	10	7	3
Bombardier	204	180	24
Dassault	66	77	(11)
Eclipse	12	0	12
Embraer	116	119	(3)
Gulfstream	150	144	6
Textron Aviation (Beechcraft)	0	6	(6)
Textron Aviation (Cessna)	159	139	20

HIGH END LEADERS: DASSAULT FALCON 7X, GULFSTREAM G550 (FACING PAGE)

PHOTOGRAPH: DASSAULT AVIATION

"The first quarter numbers show that, while our industry has been gaining traction over the past few years, we face some renewed headwinds in several regions of the world, including Asia, parts of Europe and Latin America," said Pete Bunce. "Our industry is focused on regaining momentum, but we need the US Congress to be a strong partner and reauthorise the Export-Import Bank before the June 30 deadline. It is time to stop playing political games with industry jobs. Congress needs to move ahead and pass reauthorisation quickly to ensure a level global playing field and provide needed stability in a difficult market."

Total airplane shipments declined from 520 during first quarter 2014 to 441 in first quarter 2015. Airplane billings were down 12.6 per cent from last year to $4.5 billion. Rotorcraft shipments declined by 18.3 per cent to 188 aircraft delivered in first quarter 2015 while billings were down 17.9 per cent to $0.8 billion.

In its 23rd annual Business Aviation Outlook, Honeywell is forecasting up to 9,450 new business jet deliveries worth $280 billion from 2014 to 2024. The 2014 Honeywell outlook reflects an approximate 7 to 8 per cent increase in projected delivery value over the 2013 forecast. Slightly higher unit deliveries are coupled with modest list price increases and the continued strong showing of larger business jet models in the delivery mix to generate the growth.

"2015 industry deliveries are anticipated to be up modestly again, reflecting momentum from several new model introductions and some gains linked to incremental global economic growth," said Brian Sill, President, Business and General Aviation, Honeywell Aerospace.

FIRST SIX MONTHS SHIPMENTS OF AIRPLANES MANUFACTURED WORLDWIDE

	2014	2015	Change
Piston	526	464	-11.8%
Turboprops	273	246	-9.9%
Business Jets	318	305	-4.1%
Total Shipments	1,117	1,015	-9.1%
Total Billings	$10.9B	$10.4B	-4.6%

LARGER JETS REMAIN POPULAR

Despite lower overall purchase expectations, operators continue to focus on larger-cabin aircraft classes ranging from super mid-size through ultra-long range and business liner, implying these types of aircraft will command the bulk of the value billed from now until 2024. This large-cabin group is expected to account for more than 75 per cent of all expenditures on new business jets in the near term. Volume growth between now and 2024 will be led by these classes of aircraft, reflecting 60 per cent of additional units and nearly 85 per cent of additional retail value.

"The strong desire for larger-cabin aircraft with greater range and advanced avionics is seen again in this year's survey," Sill said. "We are also seeing some improved interest in midsize and small-cabin models this year. As a full-spectrum supplier, we are pleased to see aircraft in every class with significant Honeywell equipment content among the most popular models cited in the operator survey."

Another notable finding in the 2014 survey is the improved interest levels for midsize and small-cabin aircraft in operator purchase plans. While large-cabin models still garner the largest share of specific buying plans, the midsize and smaller models recovered some share for the first time in several years, reflecting improved prospects for popular production models as well as stronger interest in newer models just now available or soon to enter service.

Most operator concerns centred on the economic tempering, tensions and fiscal austerity affecting several of the region's major economies. However, this is a topical phenomenon as most forecasts call for a relatively strong recovery in economic growth within the region over the next five years.

NORTH AMERICA CONTINUES TO LEAD

North America, the industry's mainstay market, has seen new jet purchase plan levels slip about six points to 22 per cent, just under the world average of 23 per cent, after averaging near 25 per cent for the past six years. Though buying plan levels might be moderate when compared with emerging markets, North America represents nearly 60 per cent of projected global demand for the next five years based on the region's larger installed business jet base, affirming the region's unquestionable importance to the industry's future.

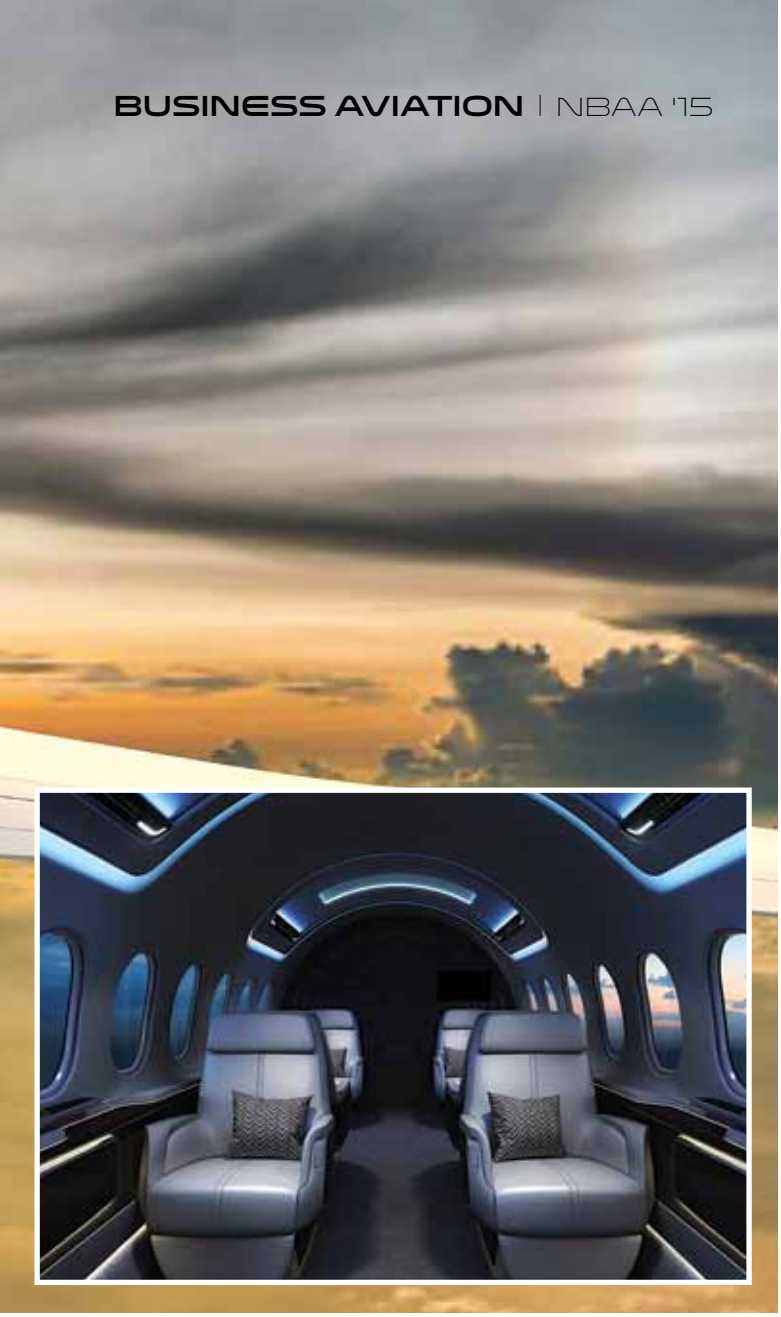
"The long-term macro trends that support demand for business jets are still in place, notwithstanding the topical issues we find colouring responses to the 2014 Operator Survey," Sill said. "We believe global business aviation growth will be aided by structural and regulatory reforms, longer-term economic growth and aircraft innovation. As a systems supplier, we believe product innovation in the form of aircraft connectivity and communication technology solutions like the JetWave Ka-band satellite connectivity system, safety and situational awareness offerings like the IntuVue weather radar, as well as flexible service offerings and value-added upgrades, will support the expanded use of business aircraft as a key tool in the global economy." SP

RESOUNDING SUCCESS

Harris Poll survey released at NBAA confirmed that business aviation is utilised mainly by small and medium-size companies that typically fly turboprops or small jets to maximise employee efficiency and productivity while providing travel schedule flexibility

BY R. CHANDRAKANTH

PHOTOGRAPHS: WWW.AERIONSUPERSONIC.COM



NEWSMAKER: DURING NBAA '15, AERION ANNOUNCED THAT FLEXJET HAS PLACED A FIRM ORDER FOR 20 OF AS2 [TOP SPEED IS MACH 1.5 (MMO)], WHICH WILL BE THE FIRST COMMERCIALLY AVAILABLE SUPERSONIC BUSINESS JET. WITH THIS DEVELOPMENT, FLEXJET BECOMES THE INAUGURAL FLEET PURCHASER OF THE AS2.

THE NATIONAL BUSINESS AVIATION Association's (NBAA) 2015 Business Aviation Convention & Exhibition was once again a resounding success for attendees and exhibitors alike. "This year's show was enormously successful," said NBAA President and CEO Ed Bolen. "In addition to the strong participation from exhibitors and attendees alike, our industry's largest event once again showcased the size and significance of the business aviation community, as well as the passion and professionalism of its people."

NBAA's 2015 convention, which took place from November 17 to 19, featured over 1,100 exhibitors in the Las Vegas Convention Center, and more than 27,000 attendees. Additionally, about 100 aircraft were displayed in several locations – at a sold-out static display at Henderson Executive Airport, at an indoor display inside the convention centre and at various exhibitor booths on the convention hall floor. Attendees from the show represented all 50 US states, and 96 countries.

"NBAA's 2015 convention was a memorable event that showcased our industry's vitality and relevance," Bolen said. "We were thrilled by the enthusiasm and activity that marked each of the show's three days, and we are already looking forward to next year's convention in Orlando, Florida, from November 1 to 3, 2016."

SURVEY CONFIRMS BUSINESS AVIATION USED BY SMALL AND MEDIUM-SIZE COMPANIES

The NBAA and the General Aviation Manufacturers Association (GAMA) released the results of survey conducted by Harris Poll that reconfirms that business aviation is utilised mainly by small and medium-size companies that typically fly turboprops or small jets to maximise employee efficiency and productivity while providing travel schedule flexibility. The poll also confirmed that a broad mix of employees – not primarily top executives – fly on business aircraft, which usually travel to community airports that have little or no scheduled airline service.

The survey indicated:

- Most companies using business aviation are small companies.
- Most companies using business aviation have only one airplane.
- More than half of the turbine-powered business airplanes flying today are turboprops or smaller jets.
- Many business aircraft are largely flown to towns with little or no airline service.
- A primary driver of business aircraft use is scheduling flexibility.
- Business aviation missions often involve multiple destinations.
- Companies use both business aircraft and the airlines as appropriate.
- Top management is on-board business aircraft less than half the time.
- Employees use their time on company aircraft to be highly effective and productive.
- Many business airplanes are used to fly humanitarian missions.
- An increasing number of companies are using business aircraft to fly internationally.

"Companies and organisations at all levels continue to recognise and rely on the immense benefits that only general aviation can offer," GAMA President and CEO Pete Bunce said. "From helping small businesses grow to allowing aid organisations to get supplies quickly to those who need it most in times of natural disasters and medical emergencies, general aviation aircraft are essential tools, as this study demonstrates."

During NBAA 2015, Flexjet has placed a firm order for 20 of Aerion's AS2 aircraft, which will be the first commercially available supersonic business jet. Flexjet becomes the inaugural fleet purchaser of the AS2 from Aerion.

The Aerion AS2 business jet has a top speed of Mach 1.5, which is 67 per cent faster than the top cruise speeds of current or anticipated long-range subsonic jets. Carrying eight to12 passengers, the AS2 has an intercontinental-capable range of 4,750 nautical miles at supersonic speed, saving three hours across the Atlantic versus subsonic aircraft and more than six hours on longer trans-Pacific routes. The three-engine jet, now under development by Aerion in collaboration with Airbus Group, will make its first flight in 2021 and enter service in 2023. SP

EMBRAER LEGACY 500 SETS NEW SPEED RECORDS

EMBRAER EXECUTIVE JETS ANNOUNCED that the Legacy 500 midsize aircraft has set two new world speed records for its class, totalling six in 2015. "These new speed records reaffirm the Legacy 500's superior performance and its suitability for transoceanic missions as well as coast-to-coast flights," said Marco Tulio Pellegrini, President & CEO, Embraer Executive Jets. "The Legacy 500 is also setting new standards in comfort, technology, operational cost and reliability in the midsize class."

The newest speed records were set for 'Speed over a Recognised Course' on a trip from the west coast of the United States to Hawaii, with five passengers on-board. The flight from Burbank to Kahului (Maui) covered 2,165 nm (4,010 km) in six hours, at an average ground speed of 422.25 mph (680 kmph), and the return flight to Phoenix achieved 525.97 mph (846 kmph), covering 2,470 nm (4,574 kmph) in five hours and 30 minutes.

Embraer Executive Jets promoted its fully certified business jet portfolio for the first time at NBAA. Embraer's Phenom 100E, Phenom 300, Legacy 450, Legacy 500, Legacy 650 and Lineage 1000E, the broadest business jet portfolio in the market, were on static display. Completing 10 years in the market, Embraer Executive Jets global fleet exceeds 930 aircraft which are in operation in over 60 countries. SP

P&WC LAUNCHES THE PT6A-140A TURBOPROP

PRATT & WHITNEY CANADA (P&WC) announced the launch of the new PT6A-140A turboprop engine and the PT6A-140AG variant – bringing the world's most popular turboprop family to more than 70 engine models strong. The new engines set the benchmark for performance and fuel efficiency delivering 15 per cent more power and five per cent better specific fuel consumption (SFC).

"Today's announcement demonstrates our ability to continuously innovate and raise the bar with the PT6A family to make the world's best engines even better," said Denis Parisien, Vice President, General Aviation, P&WC. "There are more than 70 PT6A engine models used for over 125 different aircraft applications around the globe—a testament to the PT6A's unmatched versatility, performance and reliability." SP

PHOTOGRAPHS: EMBRAER, PRATT & WHITNEY

NEW ULTRA-LONG RANGE FALCON 8X BY DASSAULT

DASSAULT AVIATION'S NEW FLAGSHIP, the Falcon 8X, also made its debut. Since first taking to the air last February, the three aircraft in the flight test programme have accumulated 380 flight hours over 185 flights, and are now more than two-thirds of the way towards FAA and EASA approval. The flight envelope has been fully opened and s/n 01 recently reached a speed of Mach 0.97. The portion of the programme dedicated to certification, including take-off and landing performance and validation of the aircraft's third-generation EASy flight deck, is also advanced.

Derived from the popular Falcon 7X and featuring many of its industry leading technologies, the ultra-long range Falcon 8X (6,450 nm/11,945 km) was unveiled in May 2014 at the European Business Aviation Convention & Exhibition and rolled out on December 17 of the same year. It will offer the greatest range and the longest cabin of any Falcon and the largest selection of cabin configurations in the industry.

Dassault Aviation Chairman and CEO Eric Trappier said: "We anticipate certification by mid-2016, on schedule, with initial deliveries to follow in the second half of the year." SP

FALCONEYE MAKES DEBUT

Dassault Aviation introduced its proprietary Combined Vision System (CVS) at the show. The system, dubbed FalconEye, was presented on a Falcon 2000LXS on display at the show. The aircraft is a production model due to be delivered soon after the exhibit ends.

"It's in our very DNA to innovate in ways that bring added value to the customer," said Eric Trappier, Chairman and CEO of Dassault Aviation. "With the advent of our Combined Vision System, operators will benefit from a superior Head-Up Display (HUD) design that affords vastly improved situational awareness and safety regardless of the time of day or weather conditions."

FalconEye is the first HUD system to combine synthetic, database-driven terrain mapping and actual thermal and low-light camera images, providing an unprecedented level of situational awareness to flight crews. The fourth-generation, multi-sensor camera is composed of six different sensors, fusing images from both the visible and infrared spectrums. •

PHOTOGRAPHS: DASSAULT FALCON

GULFSTREAM G500'S FIRST CROSS-COUNTRY TRIP

THE FLIGHT TEST AIRCRAFT arrived at Henderson Executive Airport on November 13 to join the G650ER, G550, G450, G280 and G150 in Gulfstream's static display.

The G500 flew from Savannah/Hilton Head International Airport into 75-knot headwinds and arrived at Henderson Executive 4 hours and 36 minutes later, accomplishing the 1,630-nautical-mile (3,018-km) flight at an average speed of Mach 0.85 and altitude of 45,000 feet (13,716 metres). Gulfstream test pilots Scott Martin and Scott Evans were at the controls, with flight test engineers Paul Ludlow and Nathaniel Rutland providing on-board support.

After 12 months of extensive customer input, a redesigned G600 mock-up that maximises space, convenience, comfort and capabilities debuted at the air show. The redesigned features include: a slimmer passenger service unit for increased headroom and maximised passenger space; an expanded side ledge; additional counter space in the galley; improved seating for enhanced comfort and ease of use; stone flooring in the entryway and forward lavatory; an ergonomically enhanced aft lavatory; enhanced cabin lighting and quieter drawer and cabinet latches.

The refinements made to the G600 cabin also will be reflected in the cabin of the all-new G500, for which certification is anticipated in 2017. Certification for the G600 is slated to follow in 2018. SP

HONDAJET NEARS FAA TYPE CERTIFICATION

PHOTOGRAPHS: GULFSTREAM, HONDAJET

HONDA AIRCRAFT COMPANY ANNOUNCED that it has completed all function and reliability (F&R) test conditions and is concluding F&R flights for the HondaJet. The announcement was made at NBAA. "Honda Aircraft will conclude testing with the FAA in a few days, which will pave the way for HondaJet type certification and entry into service," said Honda Aircraft Company President and CEO Michimasa Fujino. "We are expecting FAA type certification of the world's most advanced light jet very soon." In October, Honda Aircraft completed all Part 23 certification flight testing. The flight test programme has exceeded 3,000 total flight hours and testing was conducted at more than 70 locations in the US. SP

TEXTRON AVIATION'S EXTENSIVE RANGE

TEXTRON AVIATION DISPLAYED 11 of its commercial business jet and turboprop aircraft, including the public debut of the Cessna Citation Longitude super-midsize business jet (in the photograph above).

"As evidenced by our extensive line-up at the show, no other aircraft manufacturer offers the broad range of products that we do. We are excited to expand our product offering even further with the new Citation Longitude, which will be a revolution in the super-midsize segment," said Kriya Shortt, Senior Vice President, Sales and Marketing. "The Citation Longitude is a perfect example of our commitment to meet our customers' mission needs through continued product investment."

In addition to the Citation Longitude, Textron Aviation also showcased its Cessna Citation Latitude, the company's newest certified Citation business jet. The Latitude, which received FAA certification in June, is on track to achieve European Aviation Safety Agency (EASA) certification by the end of the year.

Rounding out the company's display of jets were the Citation X+, Citation Sovereign+, Citation XLS+, Citation CJ4, Citation CJ3+ and the Citation M2. "We're thrilled to unveil the future of this larger Citation family. The debut of the Longitude has been highly anticipated among prospective customers, industry observers and our Textron Aviation team members," said Scott Ernest, Textron Aviation President and CEO. SP

CERTIFICATION FOR FUSION-EQUIPPED KING AIR 350I/ER

Beechcraft Corporation, a subsidiary of Textron Aviation, announced that it had received type certification from the FAA for the new Pro Line Fusion-equipped Beechcraft King Air 350i/ER turboprop. Deliveries are scheduled to begin before the end of the year. Pro Line Fusion-equipped King Air 350i and King Air 250 turboprops made their NBAA debuts at Textron Aviation's static display.

"Our product roadmap is focused on satisfying our operators' requirements, and making Pro Line Fusion standard on our production King Airs is in direct response to customer feedback," said Christi Tannahill, Senior Vice President, Turboprop Aircraft and Interior Design. "Offering the latest technology in the cockpit and cabin has resulted in great market reaction; our owners and operators clearly appreciate that these new features improve the overall flight experience and value of the King Air."

Deliveries of the Fusion-equipped King Air 250 are expected to begin before the end of the year. Certification for the Pro Line Fusion-equipped King Air C90GTx is expected in the first half of 2016. •

PHOTOGRAPHS: TEXTRON AVIATION

UAC IN THE PROCESS OF DEVELOPING MODIFIED STRATEGY

United Aircraft Corporation (UAC) is a state owned industrial giant of Russia combining leading national aviation brands such as Sukhoi, MiG, Ilyushin and Tupolev, among others. The Corporation employs over 98 000 people with an annual turnover of over USD 7 billion. Yuri Slyusar, UAC President recently announced some new twists in the company's strategy.

FIRST OF ALL, UAC is going to change its industrial model. The idea is to activate and strengthen cooperation with other manufacturers including foreign ones, to open the UAC production facilities to most capable partners. The Corporation will activate all ways of out-sourcing and will probably decrease the number of final assembly plants.

Second, the Corporation plans to adjust the number of aircraft models to meet the existing challenges. In addition to the top priority commercial aircraft, such as SSJ 100 regional jet and MC-21 medium-range airliner UAC is looking to include the IL-114 turbo-prop that was produced in Tashkent. Between 8 to 12 IL-114 airframes have been partially assembled at the Uzbekistan-based plant and those could be used to restart production at new facilities at one of the existing aviation plants in Russia. Possible contenders could be Kazan, Ulyanovsk, Voronezh and Nizhny Novgorod factories. The total investment in the program is estimated at about USD220 mln., including USD150 mln. on production modernization and USD60 mln. on incorporation of TV7-117ST engines being developed for the IL-112V military transport.

(TOP) YURI SLYUSAR, UAC PRESIDENT IS CONFIDENT IN THE CORPORATION NEW STRATEGY;
(ABOVE) PAK FA T-50 5TH GENERATION FIGHTER' EXCELLENT PERFORMANCE AT RECENT MAKS.

The third step of the reforms is to establish five UAC sub holdings to be responsible for commercial, combat, transport and special purpose aviation respectively as well as for aircraft maintenance and support.

The Russian state gives UAC full support as it should be one of the national industrial locomotives. The State Transport Leasing Company (STLC) recently received funds from the Russian State in the amount of approx. USD500 mln. This allowed the company to attract several customers for SSJ 100. During MAKS-2015 STLC signed an agreement with the Yamal Airline on delivery of 25 SSJ 100 aircraft. Another agreement was signed with the Kazakhstan-based SCAT airline on delivery of 15 SSJ 100 with 5 aircraft as an option. The aircraft will be delivered by the UAC daughter company – Sukhoi Commercial Aircraft within this and next year.

Several Russian regional airlines from Orenburg, Tuva and Buryatia have also stressed their interest to receive SSJ 100 airplanes. We also expect that the Russian Red Wings airline which has a very positive experience with SSJ 100 will extend its fleet shortly.

All that makes UAC optimistic on the SSJ 100 prospects for the Indian market which is one of the world fastest growing ones.

In the field of military aviation UAC's most advanced product is the PAK FA (T-50), 5th generation fighter. At the moment 4 prototypes take part in the flight tests, rig tests continue as well. In 2014, the T-50 was presented for joint state trials. Three more prototypes should join the test fleet in 2015.

The plane achieved reliable results on sub- and supersonic speeds, low and high altitudes, at critical angles of attack. The avionics testing have been under way. Successful in-flight refueling has been carried out as well as aircraft performance tests in various configurations.

"The main task of the flight tests now is the combat mode performance tests, weaponry integration and use", says Yuri Slyusar.

In comparison with the previous generation fighters PAK FA enjoys a number of unique features to combine functions of both a fighter and a strike aircraft. The 5th generation aircraft has been equipped with a new highly integrated avionics complex with a high level of automated control and intellectual support of the pilot to minimize the routine work while allowing him to concentrate on tactical mission completion.

PAK FA T-50 is also to become a basis for the Indian Air Force 5th generation fighter and the UAC President is sure that the program will be successful. SP

THE AL FURSAN, THE AEROBATICS TEAM OF THE UAE, FLIES OVER THE A350 XWB OVER DUBAI WORLD CENTRAL AT THE DUBAI AIRSHOW

FASTEST GROWING AEROSPACE EXHIBITION

A total 1,103 exhibitors and over 65,000 trade visitors made it to the five-day Dubai Airshow, which for the first time featured a 3D print pavilion, 3D Printshow Dubai

BY R. CHANDRAKANTH

PHOTOGRAPH: AIRBUS

THAT DUBAI IS A major international aviation hub is a given fact. Developing it further, the aviation industry is highly active and one of the activities that props the emirate further is the Dubai Airshow, said to be the world's fastest growing aerospace exhibition. This edition too was a runaway hit as more and more new exhibitors descended on Dubai World Central (DWC), the venue, to be part of the event which was inaugurated by Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and ruler of Dubai.

Sheikh Mohammed took part in a ribbon-cutting ceremony before taking a tour of the site with Michele van Akelijen, Managing Director of Dubai Airshow organisers F&E Aerospace. His tour began with a visit to the liveried search and rescue helicopter fleet of the UAE Joint Aviation Command. He interacted with the pilots of the UAE Air Force aerobatics team, Al Fursan, which flies seven Aermacchi MB-339A jet trainer aircraft.

Michele van Akelijen said: "It is an honour to welcome Sheikh Mohammed bin Rashid Al Maktoum to officially open this year's event. With exhibitors coming from 61 countries, we are expecting to see some exciting and innovative additions to the show this year."

A total 1,103 exhibitors at the show received over 65,000 trade visitors over the five days at DWC, Dubai Airshow site, which for the first time featured a 3D print pavilion, 3D Printshow Dubai, and an exhibition by the newly formed UAE Space Agency.

(TOP) AURORA FLIGHT SCIENCES' HIGH-SPEED UAV IS 80 PER CENT 3D PRINTED WITH STRATASYS ADDITIVE MANUFACTURING SOLUTIONS; (ABOVE) BOEING AND JET AIRWAYS HAVE SIGNED A DEAL FOR $8 BILLION FOR 75 NEW 737 MAX AIRCRAFT

WORLD'S FASTEST 3D-PRINTED UNMANNED AERIAL VEHICLE UNVEILED

The world's fastest, largest and most complex 3D-printed drone was unveiled here, forming the centrepiece of the region's debut 3D Printshow. The jet-engine powered unmanned aerial vehicle (UAV) was demonstrated by show sponsor Stratasys, as part of its exhibition on the future of 3D printing technology in the aviation and space industries. The lightweight aircraft, which took just two months to create and can break speeds of 350 km per hour, is being used to highlight the flexibility of the technology to aircraft and technology manufacturers.

"This is the final piece in the puzzle for aerospace and we're really excited to present it today," said Jay Shelby, Vertical Solutions Applications Engineer for Stratasys, which recently printed more than 1,000 in-flight parts for the Airbus A350 XWB aircraft. "We're here to show manufacturers what can be done when you take this technology and build your design around it. So at the Dubai Airshow, we've seen Boeing today, we've seen Airbus, Rolls-Royce – all these companies are already using 3D printing technology and they're doing it very well, making huge savings and producing aircraft that are faster than ever before for customers like the Middle East carriers. 3D printing is helping them to meet deadlines, bring schedules forward and the technology has now gone from a piece of kit you'd have on the manufacturing floor to a technology you can actually build your manufacturing around."

The 3D Printshow highlighted developments in 3D technology and its uses in both military and commercial aircraft, as well as in rocket development and the space industry. Over 20 exhibitors took part, including D2M, 3DPS, 3D Vinci Creations and Ultimaker, with exhibitions featuring printed components as varied as aircraft models to engine parts, highlighting the technology's broad possibilities.

"3D printing is a major game changer in the aerospace industry, with major technological advances being made throughout the past few years," said Michele van Akelijen, Managing Director of organisers F&E Aerospace. "With such a big role to play in the future of the industry, it seemed natural to bring the 3D Printshow to Dubai Airshow, and we are already witnessing a very positive response to the technology on display."

MEGA ORDERS, JET AIRWAYS TOPS

Orders at the Dubai Airshow flowed in thick and fast as deals worth almost $30 billion were agreed on Day 2. Among those agreeing new purchases were Boeing and Jet Airways, who signed a deal worth approximately $8 billion which will see the manufacturer build 75 new 737 MAX aircraft for the Indian carrier, a partner airline of Abu Dhabi's Etihad. Jet Airways founder Naresh Goyal highlighted the need for new aircraft to service a growing customer base, with more than 30 million Indians now overseas and a domestic market predicted to grow to around 140 million passengers in the next 10 years. "We work extremely well and very closely with Boeing and we would like to expand that relationship further. We believe now is the time to take that partnership to new heights."

Ray Conner, President and CEO of Boeing Commercial Airplanes, added: "This has been a tremendous partnership for well over 20 years now, and it's a partnership built on trust, friendship and a deep understanding of what's necessary to be successful in a market that is extremely tough and competitive. These aircraft are the tool with which Jet Airways will compete in a very dynamic market and the 737 MAX, we believe, is the right aircraft to enable them to do that."

PHOTOGRAPHS: STRATASYS, BOEING

(TOP) DASSAULT AVIATION'S BIZJETS ON DISPLAY; (ABOVE) UAE AIR FORCE UNVEILED A DEAL WITH SAAB WORTH $1.27 BILLION TO PURCHASE TWO NEW GLOBAL 6000 LONG-RANGE SURVEILLANCE AIRCRAFT AND TO UPGRADE TWO SAAB 340 JETS

PHOTOGRAPHS: NBAA, SAAB

SAAB SIGNS DEAL WITH UAE AIR FORCE

Elsewhere at the Dubai Airshow, the UAE Air Force unveiled a deal with Swedish aerospace firm Saab worth $1.27 billion. The deal will see the UAE purchase two new Global 6000 long-range surveillance aircraft, while a further two Saab 340 jets already in UAE ownership will undergo systems upgrades. Major General Abdullah Al Hashimi said: "I am really happy to announce the first deal that has been signed between the United Arab Emirates Air Force and Saab Industrial this year, to buy two new aircrafts for an amount of $1.27 billion. By buying two new aircraft, and upgrading two existing aircraft, we are very happy to continue our relationship with Saab."

Saab Group President and CEO, Håkan Buskhe, said: "We are an extremely proud supplier to the UAE Air Force, and we think, in cooperation with the UAE Air Force, that this deal is the start of something new. The new platform offers increased endurance and a newly developed suite of sensors that the UAE will be the launch customer for. This will be a game changer for surveillance capability going forward."

ETIHAD TIES UP WITH MUBADALA

Meanwhile, UAE national carrier Etihad signed a memorandum of understanding with Abu Dhabi investment and development firm Mubadala worth a potential $1 billion. The 10-year agreement covers a range of new contracts and would see Etihad appoint Mubadala's SR Technics as its preferred service provider.

EMIRATES $16-BILLION MRO AGREEMENT

In addition, national carrier Emirates announced the signing of a $16 billion OnPointSM solution agreement with GE Aviation for the maintenance, repair and overhaul (MRO) of the GE9X engines that will power the airline's fleet of 150 Boeing 777X aircraft over a period of 12 years. This is Emirates' largest single engine MRO contract to date.

NEW EXHIBITOR INTEREST

The Dubai Airshow continues to attract new exhibitor interest with many first-time participants from a wide range of industry sectors taking part in the 2015 edition. "Since its inception, the Dubai Airshow has continued to attract ever-increasing numbers of new exhibiting partners. This is due not only to the phenomenal growth trajectory of the industry but also underscores our commitment to ensuring that the aviation sector is represented across all areas of the business mix," said Michele van Akelijen.

Frederic Pinlet, President of Paris-headquartered Concorde Future, led a delegation to not only scope out investor potential but also to promote the future of supersonic aircraft to a receptive audience. "We decided to come to Dubai as everything in the world happens in this part of the world and it is a crossroads for all businesses. The dream and spirit of Concorde and its story as the first supersonic airline is very much alive and there are many projects that could be born now, even including the original concept as a piece of history or for show. A lot of people in the industry are talking about the future of large supersonic aircraft, and there is a lot of enthusiasm," he said.

For Shant Katcherian, Avionics Development and Co-founder of Lebanon's SkyPro UAV, which produces small surveillance UAV aircraft, the Dubai Airshow was a one-stop shop location for attracting new business. "It is the place to be for big and small companies alike. We are a small start-up and already have military customers, but are looking to expand, and this is the right venue for that. We would absolutely come back in 2017," he said.

New technologies are clearly a major focus for this year's show and Peter Coker, Managing Director and CEO of Martin Jetpack, which recently signed a deal with Dubai Civil Defence, has high hopes for business growth in the region. "As an airshow, this clearly rates as one of the best. We didn't know what to expect, as people didn't know what the Martin Jetpack was, but since we've arrived, the interest has been phenomenal. In this area, we've sealed our first deal and that's thanks to the Dubai Airshow. Without this event, this wouldn't have been possible."

Established UAE SMEs also targeted the show as infrastructure developments in the aviation industry, and Expo 2020 plans, drive related demand across various areas of the business. Dubai-based Globe Hi-Fabs Middle East Managing Director, Rahul Chopra, selected the Dubai Airshow as a platform for future commercial growth as well as to push overall brand awareness of the aircraft refueller and dispenser company products. "The Middle East and Africa market is a big market for us and after just a few days we have a few deals that are quite close, and if not signed by the end of the show then we expect to have something close within the next 10 days." SP

"UPSIDE DOWN PANG" THEY called Clyde Pangborn and with good reason. This leading American barnstormer in an age of aerial derring-do specialised in slow-rolling his aircraft onto its back and flying inverted, to the amazement and joy of the crowds. He also excelled in leaping from one machine to another – either from a ground vehicle to an aircraft or from one plane to another in flight. In 1931, accompanied by his co-pilot Hugh Herndon Jr, he became the first pilot to cross the Pacific non-stop.

Born in Bridgeport, Washington, on October 28, 1894, Clyde Edward Pangborn learned to fly with the United States Army during World War I. He was appointed flight instructor and did not see active service. But while teaching numerous young cadets to fly the Curtiss JN-4 Jenny biplane, he himself learned to remain upside down for extended periods. When the war ended, he found himself without a job like many military pilots. And like many of them he turned to stunt flying to make a living. The Gates Flying Circus of which he was a co-owner along with Ivan Gates, performed all over the US and overseas making Pangborn famous for switching planes in mid-air. Once, when stuntwoman Rosalie Gordon was doing a parachute jump, she became entangled in the landing gear of Pangborn's plane, and he played a prominent part in rescuing her. Despite his many daredevil feats he never at any time caused an injury to another person and was himself involved in a mishap just once. It happened in 1920 on a beach in California when he leapt off a racing car to grab a rope ladder dangling from a low-flying aircraft. Although he caught the rope, he lost his grip and fell, resulting in three dislocated vertebrae and some bruises. However, when barnstorming began to lose its attraction for the crowds, Pangborn turned to record setting.

At the end of July 1931, Clyde Pangborn and Hugh Herndon took off from New York's Roosevelt Field in their Bellanca Skyrocket named Miss Veedol with the intention of breaking the around-the-world speed record of eight days, 15 hours and 51 minutes, set by Wiley Post and navigator Harold Gatty just a month earlier. They were well on track to do so till Khabarovsk in Siberia, when they got trapped in a terrible rainstorm. As they somehow put their plane down it slid off the runway and became hopelessly bogged down in the mud. This put them well behind schedule. Further trouble awaited them when they landed in Tokyo. Since their flight clearances were apparently not valid, they were charged with making an illegal flight and placed under house arrest. It did not help that while trying to properly document their flight, they had taken aerial photographs and since Japan was at war with China, the Japanese took a dim view when some of the aerial photos turned out to be of military areas. The two hapless Americans were also charged with espionage and detained for seven weeks. When they were finally released they were fined $1,000 and their around-the-world dream was shattered. They were given just one chance to fly out and warned that if they returned, they would be rearrested.

So the pair decided to try and win the $50,000 prize offered by the *Asahi Shimbun* newspaper for the first non-stop flight across the Pacific. On October 2, 1931, they finally took off from a nearby beach. They carried starvation rations, no radio, no survival gear and no seat cushion. Pangborn had cleverly modified the aircraft by removing the bolts holding the landing gear to the fuselage and replacing them with clips and springs attached to a cable. After take-off, by pulling the cable, the whole undercarriage would fall off. It was the only way they knew to reduce weight and coax a few hundred extra flight miles out of Miss Veedol. Otherwise, despite the dangerous amount of fuel they had taken on board, they would not be able to make it to their destination. But how could they land?

Pangborn had attached steel skids to the belly and was confident he could put the Bellanca down safely on reaching the US. Still, the aircraft was 3,400 pounds over its maximum permissible weight and just about reached its take-off speed of 150 kmph with around 100 metres of beach left. For a couple of minutes it was touch-and-go as the aircraft flirted perilously with the waves, close to stalling into the sea.

Three hours after take-off, Pangborn pulled his cable. Most of the landing gear fell off, but two struts were left dangling, making belly-landing a hazardous prospect. No problem for Upside Down Pang! Despite the freezing cold at that altitude, he crawled barefoot onto the wing and freed both struts. The lightened Miss Veedol could now climb to 14,000 feet and benefit from a strong tail wind. They had another narrow escape when Herndon forgot to pump fuel and the engine quit due to fuel starvation. In the absence on an inflight restarting system, Pang had to dive down to try and restart. The engine roared back to life only at 1,400 feet. Then they continued to fly to the US. And after spending 41 hours and 13 minutes airborne, they came in for landing on a rough strip cut out of sagebrush near East Wenatchee in Washington state. As the plane floated just above the ground Pangborn turned off the fuel and engine to avert a fire, then put it down. It skidded along the airstrip and came to a stop with minor damage to the left wingtip. Thus ended an epic adventure for which they were awarded the Harmon Trophy. When Clyde Pangborn died on March 29, 1958, he had flown over 24,000 hours. SP

— Joseph Noronha

CLYDE PANGBORN (1894-1958)

At the end of World War I, Clyde Pangborn found himself without a job and hence turned to stunt flying to make a living

MILITARY

ASIA-PACIFIC

INDIA APPROVES INDUCTION OF WOMEN IN THE FIGHTER STREAM

On October 24, 2015, the Ministry of Defence approved the induction of women into the fighter (combat) stream of the Indian Air Force (IAF). This progressive step is in keeping with the aspirations of Indian women and is in line with contemporary trends in armed forces of developed nations. Since their induction into the transport and helicopter streams of the IAF, their performance has been praiseworthy and on a par with their male counterparts. Inducting women into the fighter stream would provide them with an equal opportunity to prove their mettle in combat roles as well. The first women pilots would be selected from the batch which is presently undergoing flying training at the Air Force Academy. After successful completion of ab-initio training, they would be commissioned in the fighter stream in June 2016.

SWEDEN OFFERS INTEGRATED PACKAGE

On October 23, 2015, Sweden offered to Indonesia an air power package based on lower life-cycle cost, attractive financing solutions and transfer of technology. This offer is meant to replace Indonesia's ageing US-made F-5 E/F Tiger II jet fighter fleet. The air package includes latest generation of its light, single-engine Gripen jet fighter; Erieye airborne early warning and control for maritime surveillance and control; ground-based command and control; tactical data link to share data among various platforms; industrial cooperation, including transfer of technology and local production. The systems offered can also be used for civilian use like monitoring illegal fishing, smuggling and piracy.

ADVANCED LANDING GROUND (ALG) AT WALONG IS OPERATIONAL

ALG at Walong was inaugurated by Air Marshal C. Hari Kumar, AOC-in-C Eastern Air Command, on October 23, 2015, in the presence of senior defence service officers. Walong ALG was operational during 1962 Chinese aggression. Thereafter, it remained abandoned for a long time till it was decided in 2013 to reconstruct the ALG to make it fit for operating military aircraft. The Walong ALG will support air operations and will also facilitate the management of border areas.

JAGUAR UPGRADE

The Jaguar, apart from being an effective fighter, will be the sole aircraft for nuclear strike until upgrade of Su-30MKI is completed. Following upgrade has been planned/underway:

- **F-125IN Engine.** Rolls-Royce offered its Adour Mk 821 engine, but pulled out of the race, leaving Honeywell as the sole bidder with its F-125IN which is considered to improve mission capabilities with lower operating costs.
- **Display Attack Ranging Inertial Navigation (DARIN III).** Concurrent with the new-build production of its entire Jaguar fleet, India upgraded all but 68 ISs to meet the DARIN II standard. In early 2010, India placed an order with HAL for the upgrade of the remaining unmodified Jaguar ISs to a further-advanced DARIN III standard.
- **DARINS Harpoon Block II.** The Harpoons will give added all-weather, over-the-horizon strike capability to India's maritime Jaguar IMs. The Harpoon was fired for the first time in May 2015 by an IAF jet during testing against a target in the Arabian Sea.
- **Advanced Short-range Air-to-Air Missiles (ASRAAM).** A contract was signed in 2014 for the supply of ASRAAMs which will be called New Generation Close Combat Missile (NGCCM).
- **Cluster Bomb Unit-105 (CBU-105).** The addition of GPS and tail guidance fins has made the original unguided CBU-97 an accurate PGM that can destroy SAM launchers and radars and disable entire armoured divisions. Jaguars can carry up to six bombs which can also be carried by the Rafale. The Indian Air Force had purchased 512 units of the CBU and may order an additional 2,000 units in the near future.

RUSSIAN S-400 TRIUMF AIR DEFENCE SYSTEM FOR INDIA?

Russia has reportedly a potential sale of S-400 Triumf air defence system to India which was announced earlier this month, but now seems to have been linked with the contract on the developmental PAK-FA/FGFA fighter programme. Moscow is now thought to be blocking the sale of the S-400 systems until the Indian Defence Ministry clarifies how many of the FGFA

QUICKROUNDUP

AIRBUS

EasyJet, one of Europe's leading airline, has signed a firm order for a further 36 A320 Family aircraft taking its cumulative order for the type to 451. The agreement for six A320ceo and 30 A320neo makes EasyJet one of the world's biggest airline customers for the A320ceo Family with 321 ordered and also for the A320neo with 130 on order.

Korean Air has signed a contract with Airbus covering a firm order for 30 A321neo aircraft plus 20 options, becoming a new customer for the best-selling single-aisle A320 Family. The purchase agreement finalises a commitment announced earlier this year and was signed in Seoul.

AIRBUS HELICOPTERS

A letter of intent (LOI) for the establishment of a final assembly line (FAL) of Airbus Helicopters' H135 in China was signed with Airbus Helicopters in the presence of the Chinese Premier Li Keqiang and the visiting German Chancellor Angela Merkel. This LOI also includes a commitment by the Chinese party for 100 H135s to be assembled in the future FAL in China over the next 10 years.

BAE SYSTEMS

BAE Systems Electronics and Information Systems Inc, New Hampshire, has been awarded an $8,13,89,729 firm-fixed-price contract for Digital Electronic Warfare System Countermeasures Missile Warning System spares for the US Air Force. Work is expected to be completed by December 31, 2018.

BOEING

Boeing and Indian firm Tata Advanced Systems Limited have announced a joint venture, with the latter set to manufacture AH-64 Apache fuselages locally in India as part of a deal announced in September for 22 Apache and 15 CH-47F Chinook helicopters. Boeing announced in October that it planned to assemble one of the two types locally, with the company subject to a 30 per cent offset clause as part of the $3.1 billion deal.

BULGARIA AND POLAND

Bulgaria and Poland have signed a contract for servicing of the former's MiG-29 fighters. The two countries have been discussing a more substantial modernisation programme for the Soviet-era fighters, with the engine repair contract valuing €1.23 million ($1.36 million). The contract is likely to irk Russia, with Moscow asserting that the Poles do not have the required licence to carry out repairs on the six Flankers' engines.

CHINA

China successfully sent the Tianhui-1C mapping satellite

QUICKROUNDUP

into orbit on October 26 from Jiuquan satellite launch centre in the north-western province of Gansu. Designed by a subsidiary of the CASTC, Tianhui-1C is the third satellite in the Tianhui-1 series and will be used for scientific experiments, land resource surveys, mapping, crop yield estimation and disaster relief.

China has reportedly tested an exo-atmospheric missile thought to be capable of knocking out satellites in orbit. This latest test of the Dong Neng-3 missile is the eighth, with Beijing referring to the test as a missile defence system. A similar test took place in May 2013, with the less advanced Dong Neng-2 missile.

CHINA AVIATION SUPPLIES HOLDING COMPANY

China Aviation Supplies Holding Company has signed a general terms agreement with Airbus for the acquisition of 30 A330 Family aircraft and 100 A320 Family aircraft. The 30 A330s are the firm up of the commitment signed in June 2015.

CFM

EasyJet, one of Europe's leading airlines, has announced that it has exercised purchase rights for CFM International's LEAP-1A engine to power 30 additional Airbus A320neo aircraft. The airline also ordered 12 CFM56-5B engines for six additional A320ceo aircraft. CFM values the firm engine order at more than $975 million at list price.

COMAC

Commercial Aircraft Corp of China (COMAC) has rolled out the first C919 narrow-body airliner on November 2, at its facility in Shanghai. The twin-engine, 168-seat C919 represents the initial Chinese challenge to the Airbus/Boeing duopoly in the large commercial airliner market. The new aircraft has a range of 5,555 km.

DASSAULT AVIATION

Dassault has offered the Rafale fighter to Canada as an alternative to the F-35. The new Canadian Prime Minister looks set to withdraw from the international Joint Strike Fighter programme, pushing up the cost of the other partners' fighter in the process, although this still remains to be finalised.

EMBRAER

Sierra Nevada Corp, Florida, has been awarded a $172.5-million firm-fixed-price and cost-plus-fixed-fee contract for six Embraer A-29 aircraft. Contractor will provide six A-29 aircraft with associated support and equipment. Work is expected to be completed by July 31, 2019, and the contract is 100 per cent FMS for the Republic of Lebanon.

INDIAN AIR FORCE

The Indian Air Force is reportedly buying 20 Hawk Mk132 advanced jet trainers for its Surya Kiran aerobatics team. The deal is expected to be valued over $500 million, with fighters it will buy and the work-share arrangements. India is withholding $50 billion in development funds until these decisions are finalised, with Moscow seemingly growing impatient, as it is now five years since the two sides inked a development contract in December 2010.

SMART HELMETS FOR PILOTS OF ISRAELI AIR FORCE

Israeli Air Force fighter pilots are provided with custom-made helmets integrating symbology on flight data and the tactical situation and a high definition camera for debriefing purposes; their six-kilo weight does not appear to be a problem. The helmet includes:

- **Advanced Screen Display System.** Apart from the basics, like goggles, radio, oxygen mask and a power unit, the classic fighter helmet has been revamped to include a projector which beams real-time intelligence data directly into the pilot's shades. With his/her right eye, the pilot can easily track information such as altitude, coordinates and radar signals. In addition, the pilot receives queuing information on a target they are focused on.
- **Built-in Camera Feature.** In addition to the projector, each helmet comes equipped with a high definition action camera which consistently records every move of the pilots and the aircraft from take-off to landing. The camera is the ideal learning tool.
- **Weight.** The helmets fit like a glove as they are custom-made for each fighter pilot. However, they are heavy with a weight of six kg in normal conditions, "at high g-force, the helmet can weigh some nine times its normal weight."

INDIAN AIR FORCE CONDUCTS EXERCISE LIVEWIRE

The IAF commenced 'Exercise Livewire' its annual event, on October 31, 2015. The aim of the exercise was to validate the full spectrum of IAF capability in undertaking operations in response to likely future threats and operational contingencies and also to exercise its latest acquisitions effectively in a network-centric environment. The exercise provided the opportunity to the young generation of air warriors to hone their skills. Along with operational requirements, maintenance as well as administrative requirements were also tested as close to the likely real-time scenario as possible. Communications, net-centric warfare operations and reconnaissance capabilities were tested. Joint operations with the Indian Army and the Indian Navy were carried out against realistic targets so as to synergise their operational capability. Liaison with the Airports Authority of India had been ensured to obviate conflict with civil air traffic during the exercise.

ISRAELI AIR FORCE PREPARES FOR THE UAV THREAT

The 'Patriot' SAM Division, a part of the Air Defence (AD) Division, is responsible for protecting Israel's airspace from hostile aircraft. During Operation 'Protective Edge', the 'Patriot' batteries successfully intercepted two hostile UAVs that penetrated Israeli airspace. Subsequently the AD Division has focused on AD training

SHOW CALENDAR

1–2 December, 2015
MILITARY AIRLIFT AND RAPID REACTION OPERATIONS
Hotel NH Collection Sevilla, Spain
www.smi-online.co.uk/defence/europe/military-airlift-rapid-reaction-operations

20–23 January, 2016
US SPORT AVIATION EXPO
Sebring Regional Airport, Florida City, USA
www.sportaviationexpo.com

21–22 January, 2016
MRO LATIN AMERICA
Sheraton Lima Hotel & Convention Center, Lima, Peru
http://mrolatinamerica.aviationweek.com

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

3–4 February, 2016
MRO MIDDLE EAST
Dubai World Trade Centre, Dubai, UAE
www.mromiddleeast.aviationweek.com

29 February–3 March, 2016
HELI-EXPO
Louisville, Kentucky, USA
http://heliexpo.rotor.org

APPOINTMENTS

ROCKWELL COLLINS INDIA
On November 19, 2015, Rockwell Collins announced the appointment of Sunil Raina as the Managing Director of Rockwell Collins India.

AMETEK AEROSPACE & DEFENSE
The Power and Data Systems business unit of AMETEK Aerospace & Defense has appointed M/s Kellstrom Materials as its exclusive worldwide distributor for aftermarket spares servicing for the commercial transport market.

RAFAEL ADVANCED DEFENSE SYSTEMS
On November 11, 2015, Rafael Advanced Defense Systems Ltd announced that its Board of Directors has appointed Major General (Retd) Yoav Har-Even as President and CEO of the company.

THALES
Thales has announced the appointment of Bertrand Delcaire as Vice President, Head of Investor Relations, as of February 1, 2016.

INDIAN AIR FORCE
On November 1, 2015, Air Marshal Virender Mohan Khanna assumed charge as Air Officer-in-Charge Maintenance (AOM) at Air Headquarters, New Delhi.

against UAV threat. Salient points of the training are:

- The cadets will learn how to differentiate between a friendly and a hostile UAV.
- Training against UAVs has been doubled.
- The cooperation with various squadrons, mostly combat squadrons, has strengthened significantly and is considered an integral part of the soldiers' training exercises.
- The procedures have been modified to suit UAV threat.
- The Air Control Division which is responsible for the supervision of all air traffic and specifically the supervision of aerial forces in operations is adapting its procedures to the changing threat.
- Planning to acquire a new radar which has improved detection capability between civil aircraft and hostile UAVs.

CIVIL AVIATION

ASIA-PACIFIC

FIRST CHINA-DEVELOPED LARGE PASSENGER JET C919
The first China-developed large passenger jet, the C919, built by the Commercial Aircraft Corporation of China Ltd (COMAC), has rolled off the production line on November 2, 2015, which marks a breakthrough in the history of China's aviation industry and new level of China's high-end equipment manufacturing. A grand ceremony was held in COMAC's factory in Shanghai to celebrate the great moment. The C919, designed to have 158 seats and a standard flight range of 4,075 km, has been developed by the COMAC, which manufactures passenger aircraft, including the short-range jet ARJ21. The single-aisle narrow-body passenger aircraft C919 has been marketed over the past years with the aim of competing with the Boeing 737 and Airbus 320. The C919 aircraft will make its maiden flight next year and then begin test flights for about three years before putting into commercial use. Before rolling off the production line, a total of 517 C919 aircrafts have been ordered by 21 customers at home and abroad.

INDUSTRY

AMERICAS

LOCKHEED MARTIN COMPLETES ACQUISITION OF SIKORSKY AIRCRAFT
Lockheed Martin has completed its acquisition of Sikorsky Aircraft, a world leader in military and commercial rotary-wing aircraft. Aligned under the Lockheed Martin Mission Systems and Training (MST) business segment, Sikorsky Aircraft is now known as Sikorsky, a Lockheed Martin company. Dan Schultz has been named President of Sikorsky. Schultz led the integration efforts for Lockheed Martin leading up to today's closure and previously served as the Vice President for Lockheed Martin's Ship & Aviation Systems line of business within MST.

QUICKROUNDUP

the new aircraft coming equipped with smoke pods and decorative livery.

JAPANESE DEFENSE MINISTRY
The Japanese Defense Ministry has opted to buy three KC-46A Pegasus tankers, marking the first international sale of the aircraft, which is still in development. The three new aircraft will bolster the JASDF's fleet of four KC-767s. Unit cost of the new aircraft is likely to be $173 million. The KC-46As are planned for induction in 2020, with the Boeing bid fending off competition from Airbus' A330 MRTT.

NORTHROP GRUMMAN
Northrop Grumman Systems Corp, Military Aircraft Systems, Florida, has been awarded a $15,13,09,421 modification to a previously awarded fixed-price-incentive contract for the procurement of one Japan configuration E-2D advanced hawkeye aircraft for the Government of Japan under the FMS programme and delivered by March 2018.

RUSSIA
Russia's new air surveillance patrol aircraft could be based on the civilian Ilyushin Il-114 airliner, with the Russian Air Force and border force's requirements potentially leading resurrection of the turboprop design. The outdated but homegrown design has been revitalised by Russian Government with President Putin personally signing off on the restarted production.

SAAB
Saab has received an order for two additional airborne early warning (AEW) aircraft from the United Arab Emirates, a deal valued at $1.27 billion. The Swing Role Surveillance System will incorporate the company's Erieye radar and other sensors aboard two Bombardier Global 600 business jet platforms. The UAE already operates two Saab Erieye-equipped AEW turboprop aircraft, ordered in November 2009.

SIKORSKY
Sikorsky Aircraft Corp has announced the successful first flight of the US Marine Corps' CH-53K King Stallion heavy-lift helicopter protoype, known as Engineering Development Model-1 (EDM-1). The 30-minute flight signals the beginning of a 2,000-hour flight test programme using four test aircraft.

TURKEY
It was announced by Pakistan that Turkey will provide 34 T-37 aircraft with spares to Pakistan free of cost in a landmark deal signed between the two countries. On Pakistan's request to acquire T-37, a jet trainer and light attack aircraft, Turkey decided to give them free of charge.

COORDINATE BUILD-UP

REPORTS IN THE MEDIA in the recent past indicate that the Indian Air Force (IAF) has revived its efforts to enhance its operational reach and capability in the North East region. In fact this process had been initiated in 2009 with the induction at the airbase in Tezpur in Assam, of the first Su-30MKI combat squadron, its latest frontline fighter aircraft. However, the process of building up of fresh combat potential to match the growing capability of the potential adversary has been somewhat slow as the second Su-30MKI squadron was inducted only two years later in Chabua in Assam. More recently, on November 17 this year, two Su-30MKI aircraft of the IAF landed at Imphal International Airport generating much excitement and speculation amongst the local population. Sources confirmed to the media that sorties by combat aircraft in the region bordering China and Myanmar had been intensified and the first combat aircraft of the IAF had landed at the Imphal airport was last year after it was upgraded to the status of an international airport. The landing on November 17 by the two Su-30MKI aircraft was apparently part of an air exercise being conducted in the region.

As part of capability upgrade programme, the IAF is in the process of upgrading seven advanced landing grounds (ALGs) in Arunachal Pradesh to fully operational status with the capability to operate both by day and night. Deployment of combat aircraft by the IAF in the recent past in the North East region reflects a shift in from its traditional Pakistan-centric threat perception to what can be regarded as a more potent threat from India's Northern neighbour China especially in view of the significant build up of offensive capability in Tibet and the massive development of military infrastructure on the Chinese side of the 1,080-km-long and disputed border.

While the IAF has been making attempts, though somewhat feeble, to enhance capability to cope with the challenges of a war simultaneously on both the Western and Eastern fronts, the effort in the domain of the land forces also seems to lack focus and determination. It was for the first time in the mid-1980s that threat from China was seen to be more potent than that from Pakistan. As wars cannot be won through only a defensive posture, the Indian Army projected the requirement for the acquisition of offensive capability in the mountainous region of the North East. However, despite efforts by the leadership of the Indian Army at that time, no steps were taken by the government to prepare the land forces to take on the emerging challenges.

It was only in July 2013 that the UPA Government finally cleared the proposal from the Indian Army for raising of a Mountain Strike Corps, it's very first since inception, for deployment in the North East along the border with China. The financial burden for raising the Mountain Strike Corps, which would have a strength of 80,000 troops, was estimated at ₹65,000 crore. While the Indian Army went ahead with plans to raise the number of divisions that would constitute the Mountain Strike Corps, came the rather shocking news that the NDA Government had decided to scale down the size of the new Corps that was expected to make the land forces on the Eastern front formidable and a force to reckon with. The argument advanced by the new government to justify this decision was paucity of resources on account of which a Mountain Strike Corps of the size approved by the Cabinet Committee on Security was simply not affordable. Downsizing the Mountain Strike Corps was therefore and inescapable necessity.

Even after the Mountain Strike Corps is raised, the major impediment to its speedy and effective deployment would be the lack of proper road and rail infrastructure on the Indian side along the border with China. Unfortunately, once again, in this segment, the progress is rather tardy. China, on the other hand, has developed elaborate infrastructure to facilitate speedy deployment of the elements of the People's Liberation Army.

While there is undoubtedly the need for the IAF to build up with enhanced pace, not only its combat fleet in the North East region, but it must also improve the capability to provide efficient logistic support through an upgraded fleet of transport aircraft and rotary-wing platforms. However, India cannot hope to win a war on Eastern front unless there is simultaneous and coordinated build up of air and land forces duly supported by the required ground infrastructure. Without these, hope for victory against the Chinese forces on the Eastern front will remain a pipe dream! SP

India cannot hope to win a war against China without simultaneous and coordinated build up of air and land forces duly supported by the required ground infrastructure

—By Air Marshal B.K. Pandey (Retd)

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