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VOL 18 ISSUE 12 • DECEMBER • 2015

**EXCLUSIVE**

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- DEPLETING ASSETS OF IAF
- IAF IN DISASTER MANAGEMENT
- INTERVIEW: JOSEPH PARSLEY, YULISTA

### REGIONAL AVIATION

- TAPPING INTO UNDER-SERVED & UN-SERVED MARKETS

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**5 YEARS**  
of **SP's** DECADES OF  
SINCE 1964 BOUNDLESS  
EXCELLENCE



## COVER IMAGE:

*Windspeed Technologies have come out with a new 'SkyDeck' concept, that offers the passengers on a commercial or business jet a thrilling 360-degree viewing experience of skies around.*

Cover image by: Windspeed Technologies



**UPGRADE TO THE SKYDECK:** AN UN-INTERRUPTED VIEW OF THE SKY, SITTING IN A CLEAR CANOPY ABOVE THE FUSELAGE OF THE AIRCRAFT, IN TWIN SEATS THAT CAN ROTATE 360 DEGREES. THIS IS AN AWESOME INNOVATION ADDING FUN AND ADVENTURE TO THE TRAVEL.

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## THE 'SKYDECK' CONCEPT IS ADDING A NEW DIMENSION OF FUN IN FLYING AND THAT SHOULD CERTAINLY PEP UP THE AIRLINE BUSINESS WHICH IS ALWAYS LOOKING AT WAYS OF CREATING ADDITIONAL REVENUES

**AS WE SAY GOODBYE** to 2015, *SP's Aviation* would like to give you a 360-degree view of happenings in the aviation sector and nothing better to wind up 2015 than by looking at the futuristic design of a 'SkyDeck' which, in all probability, will turn into reality in near future, if we go by the promise made by Windspeed Technologies. The 'SkyDeck' is adding a new dimension of fun in flying and that should certainly pep up the airline business which is always looking at ways of creating additional revenues.

The 'SkyDeck' is a fascinating design concept wherein on top of the aircraft, on a safe semi-external location, will be seating for passengers to get a view of the open skies. We have an exclusive interview with the design company on how they are changing the way some of the passengers are going to fly.

The airline business is always on the lookout for innovations to enhance passenger experience, besides connectivity to places far and near. Talking about connectivity, India is still way behind in connecting destinations. Regional connectivity is woefully inadequate and it is only of late that we are witnessing a spurt in regional aviation, connecting un-served and under-served destinations. We have mapped out regional connectivity in India and notice that the gaps are too many, hoping that this will change with the emphasis now being on connecting the hinterland.

Unfortunately, growth in business aviation in India appears to be battling against heavy odds. Experience shows that leasing a business jet is somewhat easier than its purchase. Acquisition issues apart, the capability of business jets to deliver comfortable and efficient service to customers hinges to a large extent on the way the aircraft interiors are designed. There is increasing focus on this aspect by the leading global aerospace majors manufacturing business jets. A detailed study of these issues by R. Chandrakanth has been included in this issue.

The Indian Air Force (IAF) has been in the news once again and surely for all the good reasons. IAF was in the forefront to provide relief to thousands of people who were suffering on account of the devastating floods that submerged large parts of Chennai and its suburbs. This issue of *SP's Aviation* carries a report on the stellar HADR role that the IAF plays in disasters, natural or man-made.

But what ought to be of concern is the report by the Comptroller and Auditor General of India (CAG) of the significant ero-

sion in the operational capabilities of the IAF, that has been tabled recently in the Parliament. The report is specific in highlighting the maladies that affect the fleet of Su-30MKI aircraft and providing replacement for the ageing Cheetah and Chetak light utility helicopters being operated by the IAF and the Indian Army. This rotary-wing fleet serves as the lifeline for the troops deployed in the high mountains of Ladakh and the North East. A report in this issue carries an analysis by Air Marshal Raghu Rajan (Retd) on the depleting assets in the IAF and the need for urgent remedial action.

In this issue, we have a report on the Minister of Defence, Manohar Parrikar's maiden visit to the United States to further defence cooperation. The Defence Minister and the US Defence Secretary Ashton Carter took stock of the developments and it is hoped that some of the technologies would come to India sooner under the Defence Technology and Trade Initiative (DTTI). In sync with this development, we see a number of companies looking at the enormous opportunities that exist and one such company is Yulista which in the interview has said that it was interested in aircraft (rotary wing and fixed wing) and combat vehicle modification and technology insertion markets.

Indeed, there is so much happening on both civil and military aviation that the next few years are going to be fascinating.

Wish You a Happy New Year 2016!



**JAYANT BARANWAL**

PUBLISHER & EDITOR-IN-CHIEF



### NEWS:

#### INDUCTION OF WOMEN INTO THE IAF AS FIGHTER PILOTS

In a reply to Lok Sabha on December 4, Minister of State for Defence Rao Inderjit Singh said: "The Government has approved entry of women pilots into the fighter stream of the Indian Air Force (IAF) on an experimental basis for a period of five years." He further stated that women pilot trainees currently undergoing Stage-I training at the Air Force Academy would be assessed for their suitability for the



fighter stream and those selected will undergo Stage-II training accordingly. Upon successful completion of Stage-II, the first batch of women trainees would be commissioned into the fighter stream in June 2016. Induction of women into the IAF as fighter pilots cleared by the government, is a historic move for the armed forces which had so far dithered over combat role for women.

### VIEWS:

**WOMEN HAVE BEEN FLYING** combat aircraft successfully in a number of countries of the world such as the US, UK, France, Turkey, Israel, China and even Pakistan. Coincidentally, on the day that the Lok Sabha was informed of the decision by the Indian Government, the US Defense Secretary Ashton Carter also announced that his government had moved even further and decided to open to women all positions including frontline combat roles in the armed forces. Said Defense Secretary Carter "We cannot afford to cut ourselves off from half the country's talents and skills. We have to take full advantage of every individual who can meet our standards."

The US Air Force inducted its first woman fighter pilot Col Jeannie Leavitt in 1993. About the same time, the US Navy commissioned Lieutenant Kara Spears Hultgreen as the first carrier borne combat pilot. Unfortunately she died soon after in a crash at sea while flying the F-14 Tomcat. The UK followed suit in 1994 and today in the Royal Air Force (RAF) there are 10 women fighter pilots flying the Eurofighter Typhoon or Tornado jets in combat missions. RAF women combat pilots flying the Tornado are reported to have flown hundreds of operational missions over Afghanistan as part of Britain's offensive against the Taliban. A female fighter pilot of the RAF led the first aerial combat mission into Iraq operating from an RAF base in Cyprus. It was a highly dangerous mission over territory in Northern Iraq held by the ISIS. In Israel, women pilots had flown combat missions during the Israeli War of Independence but thereafter women were excluded from combat flying. This restriction was lifted in 1995 following which the first woman to earn wings in 2001 as a fighter pilot was Lt Roni Zuckerman. Closer home, in June 2013, Flight Lieutenant Ayesha Farooq, one of the 19 female pilots in the Pakistan Air Force (PAF), became the first female pilot to be a part of the fighter stream flying the Chinese made F-7PG. Tragically, in November this year, Mariam Mukhtiar, another Pakistani female fighter pilot in the PAF succumbed to her injuries sustained during ejection from a combat aircraft following a serious emergency in the air.

A woman going into combat is neither without precedent nor alien to Indian culture or tradition. After all, in 1858, the

Rani of Jhansi, went into the battlefield on horseback with sword in hand and her infant son strapped to her back to take on the British who were on the offensive. Tragically, the Rani and her son were both martyred. She had left instructions with her soldiers that in case she dies in battle, her body must be burnt immediately and that under no circumstances should the British soldiers be able to get hold of it.

But the community of veterans in the IAF is clearly divided on this issue. While most have welcomed the move, some are sceptical. One has even described the initiative by the IAF supported by the Ministry of Defence as a "hair brained idea". The argument put forward to support this view is that training of a fighter pilot up to operational status is indeed an expensive affair and once a woman soon after being trained as a fighter pilot gets married and is in the family way, she cannot continue to fly fighter aircraft at least for a couple of years if not more rendering investment in her training wasteful. As and when she is in a position to return to flying combat aircraft, she would once again be required to undergo refresher training thus adding to initial cost of training. From the point of view of the principle of return on investment, the proposal does not appear to be worthwhile.

There is also an apprehension and genuinely so about the fate of a woman fighter pilot shot down over enemy territory and is captured alive. To obviate this possibility, there is a suggestion that women fighter pilots should be employed only in the air defence role or other missions within the boundaries of the nation.

In the final analysis it is really not a contest of skills between male and female fighter jockeys as female pilots flying transport and helicopters in the IAF have adequately proved their mettle and in no way are they less competent than their male counterparts. The latest move to induct them into the fighter stream of the IAF will indeed be inspiring as well as challenging for the future generations of women who aspire to "Touch the Sky with Glory" and a positive development in respect of their emancipation and fulfilment of aspirations! SP

*—By Air Marshal B.K. Pandey (Retd)*



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US DEFENSE SECRETARY ASHTON CARTER AND DEFENCE MINISTER MANOHAR PARRIKAR CONDUCT A JOINT PRESS CONFERENCE AT THE PENTAGON ON DECEMBER 10, 2015

# MAIDEN VISIT OF PARRIKAR TO US

Both the Defence Ministers took note of the positive progress during the recent meeting of the Joint Working Group on Aircraft Carrier Technology, especially in the area of Aircraft Launch and Recovery. Under this programme Indian engineers will participate in the development of Electromagnetic Launch Systems for the future aircraft carriers on government to government basis under the DTTI.

BY RANJEET KUMAR

PHOTOGRAPH: DOD



**INDIAN DEFENCE MINISTER MANOHAR** Parrikar paid a landmark visit to the United States at the invitation of the US Secretary of Defense Ashton Carter in the second week of December this year. The highlight of the visit was the four-hour guided tour on the nuclear-powered US aircraft carrier USS Dwight D. Eisenhower, given by US Defense Secretary Carter himself and if the bonhomie displayed by the two Defence Ministers during the guided tour was any indication.

It can be said easily that the two countries are now geared to long-term strong partnership, which would have global ramifications especially in Asia. This was the first visit of an Indian Defence Minister to the US nuclear-powered carrier. The US side has two-pronged aim behind arming and equipping India with modern weapon systems like the Apache attack helicopters and modern anti-tank and long-range air-to-surface missiles. First, this will help bring new businesses to US defence companies and second, this will advance US strategic interests in the Asia-Pacific region. The US had earlier supplied the long-range maritime surveillance aircraft P-8I, called Poseidon in the US Navy. It was for the first time that this modern maritime and lethal surveillance aircraft in the world has been supplied to any navy outside US.

However beyond the traditional weapon systems and platforms, the Pentagon is ready to help India indigenously develop and produce the latest class of weapon systems and platforms. To enable this the Pentagon has for the first time created for any country a special cell for India called the India Rapid Reaction Cell (IRRC) which falls under the purview of the International Cooperation Office of the Under Secretary of Defense for Acqui-

sitions, Technology and Logistics. The IRRC will assist in promoting the initiatives of the DTTI (Defence Technology and Trade Initiative) which is intended to jointly develop and manufacture in India next-generation military technology.

The Defence Minister Parrikar was accompanied by a very high level defence industry delegation from India which included the doyens of Indian industries like the L&T, Tata, Reliance, Dynamatic Technologies, Sun Group, etc. The delegation also included the Indian Defence Secretary and Vice Chiefs of the three services besides other senior officials.

After the talks, the two sides issued a joint statement which also indicated an evolving long-term partnerships which will be a subject of envy for India's neighbours. According to the joint statement Manohar Parrikar and Secretary Carter discussed the India-US defence relationship and broader India-US strategic partnership and focused on ways to maintain the strong momentum of security and defence engagement, including means to further move the DTTI forward. Both expressed satisfaction with progress achieved under DTTI and committed to identify additional projects for possible co-development and co-production of high technology items that meet the transformational intent of DTTI.

Both the Defence Ministers took note of the positive progress during the recent meeting of the Joint Working Group on Aircraft Carrier Technology (ACTC), especially in the area of Aircraft Launch and Recovery (ALRE) and expected the progress to continue during the second meeting of the ACTC to be held in February 2016. The meeting will be held this time in New Delhi. Under this programme, Indian engineers will participate in the development of Electromagnetic Launch Systems (EMALS) for the future aircraft carriers on government to government basis under the DTTI.

The two sides also commended the progress achieved in the Jet Engine Technology Joint Working Group, which met in the first week of December in Bengaluru. The meeting resulted in terms of reference and had productive discussions on cooperation in this area. According to sources under this cooperation, Indian and US experts will jointly develop a jet engine for India's decade-old proposal to develop advanced medium combat aircraft (AMCA). This will be a significant part of the DTTI. It is worth mentioning that India could not finally develop the jet engine Kaveri for the light combat aircraft (LCA) Tejas, even after two decades of effort. India had to ultimately order F-404 engine for the LCA from the United States. Now India's AMCA project has been designed in a very ambitious manner. Indian planners want to develop an indigenous engine for the AMCA project which may be India's answer to the fifth-generation fighter.



GENERAL ATOMICS' (GA) CEO DR. VIVEK LALL WITH U.S. PRESIDENT BARAK OBAMA. GA IS OFFERING EMALS TO INDIAN NAVY. REPORTEDLY, INDIAN AIR FORCE HAS ALSO SHOWN INTEREST IN THE PREDATOR UCAC



DEFENSE SECRETARY ASHTON CARTER AND DEFENCE MINISTER MANOHAR PARRIKAR AT THE PENTAGON ON DECEMBER 10, 2015

During the meeting Secretary Carter also informed Parrikar that in the light of the strengthening relationships between US and India the US Department of Defense has updated its policy on gas turbine engine technology transfer to India. Due to this policy update the US Defense Secretary expressed the confidence that US will be able to expand cooperation in production and design of jet engine components. The US companies will further work with Indian counterparts to submit transfer requests that will benefit from this updated policy.

During the meeting Parrikar also informed Secretary Carter Indian decision to participate in the Rim of the Pacific (RIMPAC) multilateral naval exercises in 2016. India will also participate in multilateral Red Flag exercise in April-May 2016. Both the Ministers also expressed support for greater air-to-air interaction in the coming years. US side also confirmed the participation of the US naval ships in the International Fleet Review being hosted by the Indian Navy in February 2016.

Both the Defence Ministers also expressed appreciation for the progress achieved last month at the Defence Policy Group meeting which focused attention on defence capability development for humanitarian assistance and disaster relief.

However, according to sources, in spite of lot of goodies to Indian armed forces, Indian side is not convinced about the need to adhere to US defence laws like the LSA, CISMOA and BECA. It has been reported that the US side raised this issue and told Parrikar that adhering to these foundational US laws will easily facilitate transfer of technology and weapon systems without

crossing the bureaucratic barriers. US officials contend that of all the LSA is the most easier one and will facilitate easy exchange of goods mid sea in case of emergency. However, due to Indian political sensitivities it would be difficult for the Modi Government to agree to these US laws. The CISMOA (Communication Interoperability and Security Memorandum) and BECA (Basic Exchange and Cooperation agreement for Geospatial Cooperation) are considered to be surrendering to US laws and it would be difficult for the Indian Government to sign on this.

According to sources, Parrikar also raised the issue of US supply of defence systems like the F-16 fighter aircrafts and associated weapon systems to Pakistan in the name of fighting terrorism. But the US gave a standard reply that it will not create any imbalance in the region and it is necessary for US to keep Pakistan in good humour. Interestingly the US side is interested in manufacturing the F-16 fighters

in India under the 'Make in India' programme. On the other hand the US side offered to manufacture F-18 multi-role fighters in India under the 'Make in India' programme. Indian political and domestic economic environment has changed so drastically that US companies have been vying among themselves to manufacture their top category weapon systems and platforms in India. Not only this if India moves forward in developing the advanced medium combat aircraft US has decided to assist India in this ambitious venture. The US' willingness to cooperate with India in jointly developing the next-generation jet engine with Indian experts is very significant. **SP**

**INDIAN POLITICAL AND DOMESTIC ECONOMIC ENVIRONMENT HAS CHANGED SO DRASTICALLY THAT US COMPANIES HAVE BEEN VYING AMONG THEMSELVES TO MANUFACTURE THEIR TOP CATEGORY WEAPON SYSTEMS AND PLATFORMS IN INDIA**





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APRIL, CAN STILL HELP IAF REGAIN ITS  
FLEET STRENGTH HENCE CALLS FOR  
CONCLUSION OF CONTRACT WITHOUT  
ANY MORE DELAYS

# DEPLETING ASSETS OF THE IAF

The Standing Committee on Defence has rightly brought to the notice of the government the urgent need to replenish the depleting assets of the IAF

BY AIR MARSHAL RAGHU RAJAN (RETD)

PHOTOGRAPH: FRENCH AIR FORCE / DASSAULT AVIATION

**“NATIONAL SECURITY IS BEING** compromised with a fast-eroding strength of combat aircraft in the Indian Air Force (IAF) vis-à-vis the neighbouring countries, leading to a very grim situation”, a parliamentary panel said in December 2014. “With regard to the strength of combat squadrons, it is learnt that we are down to 25 squadrons today even though the authorisation is for 42 combat squadrons. Thus, our capability has already come down,” the Standing Committee on Defence said in a report tabled in Parliament. Is the situation as bad as it was painted? Is the IAF doing something about this critical state of affairs? Is the depleting strength of combat aircraft affecting the combat potential of the IAF, which is the real measure of the IAF’s ability to manage conflicts?

## ANALYSIS

The authorisation of a strength of 42 combat squadrons for the IAF was worked out post the 1962 Sino-Indian conflict. This figure had been trimmed down to 39.5 squadrons by the Government of India. The IAF has been urging the government during the annual IAF Commanders Conferences of the need to build up the strength of the combat fleet, but to no avail. Perhaps, the government believes that conventional wars are not likely to take place in this integrated world and hence is not pursuing the aircraft purchases with the seriousness it deserves.

The combat potential of an air force should be judged not only by the number of fighter aircraft in the fleet; but also by other assets such as surface-to-surface missiles (SSMs), com-

mand, control, communication, computers, intelligence, surveillance and reconnaissance (C4ISR) systems, airborne warning and control system (AWACS) aircraft, aerial refuellers, unmanned aerial systems (UAS), air defence weapons consisting of fighter aircraft, SAMs, air defence artillery, besides other vital attributes such as well trained and professionally capable human resource. Finally, it would also be appropriate to address the effect of the government's 'Make in India' thrust which has stalled a number of purchases of the IAF. Let us look at the criticality of the fighter aircraft of the IAF first.

### THE COMBAT FLEET

The same parliamentary panel had noted that the IAF had only 25 active fighter squadrons with 14 of them equipped with MiG-21 and MiG-27 combat planes which would be phased out by 2024. It added that the strength would be reduced to just 11 squadrons by 2024. This "widening gap" has occurred primarily due to the rate of retirement of the fighter jet aircraft, it said.

Though the IAF has contracted for 272 Sukhoi Su-30MKI planes to equip 13 squadrons, delivery of which would be completed by 2020, the IAF would effectively be able to add 13 squadrons in its fleet only by that year, the committee observed. Besides the Su-30 aircraft, the IAF has in its inventory, three squadrons each of the Mirage 2000 and MiG-29 aircraft, both being upgraded to enhance multi-role capability. It also has four squadrons of Jaguar aircraft. By 2021, the IAF expects to have seven squadrons of the Tejas fleet consisting of the Mk I and IA. Along with the two squadrons of the Rafale to be inducted after the negotiations are completed, the IAF would have regained its fleet strength of 39.5 combat squadrons by 2025.

When one considers the force capability, then the analysis reveals a more optimistic picture. A Su-30MKI carries nine tonnes of weapon load as compared to four tonnes each by the Jaguar/Mirage 2000/MiG-29 aircraft and two tonnes by the Tejas aircraft and that too over longer ranges. Hence a fleet of 272 Su-30MKI aircraft will give the IAF a far more capable force! This capability driven force should be able to cope with limited operations till 2025 by which time the combat aircraft inventory is expected to reach 39.5 squadrons.

### SURFACE-TO-SURFACE MISSILES

The combat capability of the IAF is being augmented by the indigenous Prithvi and the Agni SSMs. The Prithvi is a tactical SSM with a range of 350-500 km and the Agni series which carries a payload of 500-1,000 kg, with ranges purported to be over 5,500 km. These SSMs, along with the submarine launched SSMs, will serve as a deterrent to any adventurous adversary!

### C4ISR SYSTEMS

Having looked at the sharp edge of the combat potential, a brief recap of the C4ISR capabilities will be in order. The IAF had started an indigenous Aerospace Command and Control System, called the Integrated Aerospace Command and Control System (IACCS), which is gradually taking shape. Its initial purpose is to cover the aerospace defence of India, but given the extended radar coverage of AWACS aircraft, it can also provide protection to the strike aircraft of the IAF up to its radar coverage. Since it will obtain inputs from civilian air traffic control and the Indian Army air defence radars as well as naval radars, it will provide the command at the strategic level, a comprehensive and integrated picture of the aerospace situation in real time. The coverage of this system is expected to extend to the entire Indian subcontinent in a few years from now. While details are classified, the IAF is reported to be taking innovative steps in net-centric and cyber warfare.

### FORCE MULTIPLIERS

AWACS, aerial refuelling aircraft and UAS are described as Force multipliers as they enhance the capabilities of all aerial vehicles of the three services. The IAF has a fleet of AWACS as well as aerial tanker aircraft, but their limited numbers may be able to cater to only a single adversary. The IAF has made plans to enhance the numbers of all these systems in its inventory. In addition to the Israeli Phalcon radars mounted on an Il-76 platform, the IAF has also on its inventory, an indigenously developed radar mounted on an Embraer-145 platform with slightly less coverage. Even here, the IAF has made plans to induct more of these aircraft with enhanced capability. The situation as far as UASs are concerned is complex. UASs are intelligence and reconnaissance platforms and with limited strike capability which are ideal for counter insurgency (COIN) operations. Optimal utilisation of force multipliers demands centralised control and decentralised use, but that is still a long way off.

*Continued on page 24...*



SU-30MKI



CHEETAH



MIG-21



# A WAKE-UP CALL FROM CAG

What is also interesting and pertinent is that the present CAG was the Defence Secretary two-and-a-half years ago!

**ON DECEMBER 18, 2015**, a report by the Comptroller and Auditor General (CAG) of India tabled in the Parliament pertained to the eroding operational capabilities of the Indian Air Force (IAF) and the Army Aviation Corps (AAC).

## SUKHOI SU-30MKI AND THE AWACS FLEETS

The report highlighted the poor state of serviceability of the most recent acquisition by the IAF of the fleet of the Sukhoi Su-30MKI combat aircraft from Russia. Of the 272 aircraft ordered by the IAF, 210 have been inducted so far and the serviceability of the fleet has only been around 55 to 60 per cent as against the required 75 per cent. The Su-30 fleet also suffers from a high rate of AOG (aircraft on ground) owing to lack of spares and non-availability of adequate repair facilities. The jets also suffer from frequent snags in the fly-by-wire system and deficient radar warning receivers.

The CAG has observed that the fleet of three Airborne Warning and Control System (AWACS) aircraft has not been utilised at the authorised rate. The report said that there was suboptimal utilisation of their operational capabilities in terms of flying tasks due to poor planning and serviceability. On an average, there was a 43 per cent shortfall against the established task of 1,500 flying hours per annum.

## COMMENTS

The contract for licensed production of 140 Su-30MKI aircraft by the Hindustan Aeronautics Limited (HAL) was signed with Russia in the year 2000. The order was subsequently increased to 272 with completion of delivery by 2016-17. However, the revised time frame for delivery is 2019. The delay of two-and-a-half years was on account of the IAF's requirement for changes in the platform to improve aerodynamic performance. As for the low serviceability, there is a combination of factors. Firstly, HAL is totally preoccupied with the production of the Su-30 and is not in a position to divert human resources required to provide maintenance support for the operational fleet. Hopefully the situation will improve after HAL completes delivery by 2019. However, if the IAF places additional orders for the Su-30, the flight line availability of the Su-30 may continue to be low for some more time.

As for maintenance issues pertaining to both the Su-30 fleet and the three IL-76-based AWACS platforms, both of Russian origin, there is possibly a commonality of problems. As for non-availability of spares and frequent snags, the IAF is dependent on the original equipment manufacturer (OEM) for product sup-

port. However, maintenance problems are compounded by the inadequacy of product support from earlier the USSR and now Russia, in respect of military hardware supplied by them. This has been an endemic problem. This is one of the reasons why the IAF has been keen on alternative sources for import of aircraft and weapon systems. Under-utilisation of the AWACS fleet, as would be the case with the Su-30 fleet with under 60 per cent serviceability, is therefore not very surprising.

## REPLACEMENT OF CHEETAH AND CHETAK FLEETS

The CAG has held the Ministry of Defence (MoD) responsible for failure to replace the ageing fleets of Cheetah and Chetak helicopters most of which are over 30 years old. The AAC employs these platforms for reconnaissance and logistic support to forward areas such as the Siachen Glacier. There is a deficiency of 32 per cent in the fleet strength authorised and with the low rate of serviceability, the effective operational availability is only 40 per cent of authorisation.

## COMMENTS

The tender for 197 light utility helicopters (LUH) was cancelled twice for some not entirely convincing reasons. HAL has also not been able to deliver on this front and there is no certainty of time frame in which it will. However, recently, there have been a number of joint ventures driven by the spirit of 'Make in India', both in the public and private sectors of the Indian aerospace industry to meet with this requirement of the IAF and the Army which at this point in time stands at 400 platforms.

IT IS UNLIKELY THAT THE MOD AS WELL AS THE POLITICAL LEADERSHIP WOULD BE OBLIVIOUS OF THE DEBILITATING PROBLEMS THAT HAVE BEEN AFFLICTING THE IAF AND THE AAC FOR YEARS

## THE FINAL WORD

The essence of the observations by the CAG has been available in the public domain for years and as such these have neither been closely guarded secrets nor are these original by any stretch of imagination. These problems as also many others afflicting the state of equipment in the Indian armed forces have been frequently highlighted in defence journals as also have been discussed in seminars and conferences. It is unlikely that the bureaucracy in the MoD as well as the political leadership that together are part of the government, would be oblivious of the debilitating problems that have been afflicting the IAF and the AAC for years.

What is also interesting and pertinent is that the present CAG was the Defence Secretary two-and-a-half years ago ! SP

—By Air Marshal B.K. Pandey (Retd)





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STRANDED PEOPLE TO BE AIRLIFTED TO SAFER PLACES, BOARDING AN IAF AIRCRAFT AT AIR FORCE STATION IN TAMBARAM, NEAR CHENNAI, DURING THE RECENT HEAVY RAINS WHICH DEVASTATED THE CITY AND OTHER PARTS OF TAMIL NADU

# STELLAR ROLE OF THE IAF

The key to efficient disaster response depends on creating awareness in the local population and effective training of the specialised forces

BY AIR MARSHAL DHIRAJ KUKREJA (RETD)

PHOTOGRAPH: IAF





(CLOCKWISE FROM TOP LEFT) STRANDED PEOPLE AIRLIFTED; AERIAL VIEW OF FLOOD-HIT AREAS OF CHENNAI AND ITS SUBURBS; SCENES OF RELIEF AND RESCUE OPERATIONS UNDERTAKEN BY IAF; IAF CHEETAH HELICOPTERS CARRYING OUT WINCHING OPERATIONS TO RESCUE STRANDED PEOPLE

**CHENNAI IS SLOWLY LIMPING** towards regaining normalcy, as the flood waters recede. "The Tamil Nadu Government has asked the Indian Air Force (IAF) to conclude its relief operations. Undertaken amidst heavy rains, these operations were carried out over five days, from December 2-6, 2015", read a government statement of December 8. Conceptually, the military should be called out in aid of civil authorities only when the situation is beyond the capability of the civil administration, be it to maintain law and order or provide assistance in times of natural disaster. In practice, however, it is not the story; either of Services, depending on the nature of the emergency, is the crucial immediate responder in all high intensity disaster situations and forms the core of the government response capacity. If the armed forces, more so the IAF, due to its capability of response, is to undertake every task, then why waste money on the various civil agencies, even below district level, which are supposed to provide immediate relief and take on the rescue effort?

#### UTTARAKHAND AND SRINAGAR

In the recent past, the IAF has been involved in massive rescue and relief operations in tandem with the Indian Army, the Indian Navy and some of the paramilitary forces in Uttarakhand, Srinagar and more recently in Chennai. Op Rahat, the rescue effort in Uttarakhand in June 2013, involved various fleets of the IAF. It was a daunting task with helicopters required to land on postage stamp-sized, hastily prepared cleared areas and fly sorties to villages and towns, which had literally been wiped off from the face of the earth and were hence difficult to locate. The transport aircraft, besides the routine flying in of relief material and flying out of stranded civilians, established an 'air bridge' to supply fuel in the remote areas not accessible otherwise, to facilitate helicopter operations. A total of 3,536 sorties were flown by the IAF, 23,892 persons were airlifted to safer areas and 797 tonnes of relief material airlifted—a mammoth task by any standard undertaken by a fleet of over 50 helicopters and transport aircraft.



The story in Srinagar was somewhat similar in September last year, when the River Jhelum had broken its banks after incessant rains. As floods wreaked havoc and destruction in the state of Jammu and Kashmir (J&K), the IAF and the Indian Army were once again the immediate responders. Later, the Indian Navy too joined in with 200 marine commandos (MARCOS), flown in by the IAF. All three Services were deployed to carry out the speedy rescue and relief operations in the flood-hit areas of J&K. About 70 fixed-wing aircraft and helicopters of the IAF were pressed into service to fly in relief material and personnel. Additionally, six teams of the National Disaster Response Force (NDRF) were also flown in. The IAF flew about 3,000 sorties, airlifting 4,500 tonnes, which included dropping of food and essential supplies by helicopters. The fixed-wing aircraft evacuated about 35,000 civilians, while the helicopters rescued about 17,000 people, stranded in isolated areas or in need of immediate help.

#### CHENNAI

This year, it was the turn of Chennai to be 'rescued' by the IAF. The incessant rain notwithstanding, the IAF responded with its usual promptness and reached the flood-affected Chennai region, commencing operations at dawn on December 2. The rescue and relief operations commenced immediately thereafter from Air Force Station in Tambaram and the Naval Air Station in Arakkonam. The transport fleet of the IAF consisting of C-17, C-130, IL-76 and An-32 was pressed into service, and flew 48 sorties, airlifting, apart from relief supplies, 30 teams of the NDRF and five teams of the Indian Army into the affected areas. These aircraft airlifted 300.8 tonnes of relief material, including suction pumps and boats. As the civil airport at Chennai was under water and declared inoperative, the IAF pitched in to evacuate 770 stranded civilian passengers to cities like Bengaluru, Hyderabad and Delhi.

The IAF helicopters too operated from the airbase at Tambaram, at times in marginal weather conditions, evacuating stranded citizens of Chennai, who were taking refuge on rooftops. The fleet flew 192 sorties, airlifted 456 people, including women, infants and senior citizens. The helicopters airdropped the much needed supplies of drinking water and food. The rescue of a lady in advanced stages of pregnancy, from the top of a water tank by a helicopter was a display of professionalism of the highest order. Neighbours, who recorded the rescue, uploaded it on the social media, from where it was picked up and telecast on almost all news channels, winning accolades from the entire country. The proud mother gave birth to twins the following day and was felicitated by the IAF pilots who rescued her.

#### ROAD AHEAD

India has been traditionally vulnerable to natural disasters due to its unique geoclimatic conditions. Floods, droughts, cyclones, earthquakes and landslides are recurrent phenomena. As per a study by the Indian Institute of Technology, Kanpur, about 60 per cent of the landmass is prone to earthquakes of various intensities; over 40 million hectares is prone to floods; about eight per cent of total coastal area is prone to cyclones and 68 per cent of the land area is susceptible to drought. In the decade 1990-2000, an average of about 4,344 people lost their lives and about 30 million were affected by disasters every year. The loss in terms of private, community and public assets is astronomical. It is only

after a disaster strikes that the wheels of the government, both at the Centre and at the states, move and that too bit by bit as experience has shown. With disasters striking India with increasing regularity and ferocity, there should be a plan in place to tackle the disaster and reduce its impact. As a result, people are repeatedly caught unaware.

Some lessons have been learnt and the National Disaster Management Authority (NDMA), under the Ministry of Home Affairs, was established through an Act of Parliament in 2005. The agency is mandated to frame policies, lay guidelines and best practices, in coordination with the State Disaster Management Authorities (SDMAs) to ensure a comprehensive approach and effective response in the event of a disaster. While it trains the administration and police forces for a quick response to minimise damage, it is unfortunate, that the reality is different. The NDRF, under the NDMA, has been constituted and has its 12 battalions located in various sites in the disaster prone areas, to minimise the response time. The personnel are on deputation from the paramilitary forces and are trained and equipped to handle natural and man-made disasters and even nuclear, biological and chemical (NBC) emergencies. After its establishment in 2005, the NDRF does have success stories of

creating awareness amongst people, training of state administration and police personnel, and many rescues to its credit. Yet, in the unfortunate event of a disaster, the first response is almost always by the IAF or one of the Services, with a complete breakdown of the state machinery.

The key to efficient disaster response depends on creating awareness in the local population and effective training of the specialised forces. While the armed forces train and re-train for fighting a war, providing succour in times of a disaster, it must be remembered, is not the primary role of any of the Services. It is very important to ensure capacity-building of the state administration and police personnel, who invariably should be the first responders. Their training, hence,

is of equal, if not of greater importance. In addition, the local people need to be sensitised about the precautions to be taken and the immediate actions to be initiated in the event of a calamity.

#### CONCLUSION

In view of the frequency of disasters striking India, there is a need for continued vigilance, preparedness and conscious efforts to reduce the impact of a natural disaster and avoidance of man-made disasters. It requires a planned approach to disaster management. An encouraging development in the area of disaster management in the country is the ushering in of a new culture of preparedness, quick response, strategic thinking and prevention. Efforts are also underway to make disaster management a community movement with active involvement of the locals. A lot more, however, needs to be done to create a mass movement in near future.

Disaster management is not merely a subject to be taught in classrooms, but a habit to be developed not only by the individual, but also by the entire community. Participation of every component of society in practising disaster management is the sole key to success.

Until we achieve a mass movement, the IAF along with the Indian Army and the Indian Navy will continue to be available to the country in any eventuality. SP

THE RESCUE OF A LADY  
IN ADVANCED STAGES  
THE PREGNANCY, FROM  
ON TOP OF A WATER  
TANK BY A HELICOPTER  
WAS A DISPLAY OF  
PROFESSIONALISM OF  
THE HIGHEST ORDER



## "YULISTA WILL SUPPORT INDUSTRIAL DEVELOPMENT IN INDIA WITH THE LATEST STATE-OF-THE-ART MANUFACTURING AND FABRICATION PROCESSES"

Yulista is a recognised industry leader in the modernisation and service life extension of rotary- and fixed-wing aircraft. YAI has extensive experience with both military and commercial aircraft. **Jayant Baranwal**, Editor-in-Chief, **SP's Aviation**, in conversation with **Joseph Parsley**, Director Business Development, Yulista LLC.

### **Jayant Baranwal (JB): History of Calista Corporation and its range of activities?**

**Joseph Parsley (Joseph):** Calista is an Alaska Native Regional Corporation, established in 1971 as a means of creating economic opportunities for approximately 12,900 Alaska Native shareholders in south-west Alaska.

Calista Corporation owns more than 35 subsidiaries, providing a variety of services including rural camp services; heavy equipment sales, rental and service; both rural and urban construction including heavy civil and arctic construction; environmental remediation, range reclamation and natural resource development; ocean and shallow-draft river marine transportation; real estate investments; telecommunications, cyber security and cloud technology; full-service public relations and marketing; website development; military defence contracting; and much more. When you do business with Calista, you have access to a network of companies that are dedicated to delivering the highest quality services at the greatest value.

### **JB: Role the Government of Alaska in the establishment of the Corporation – do they continue to play the role in management?**

**Joseph:** In 1971, the landmark Alaska Native Claims Settlement Act (ANCSA) was signed, addressing the issue of Alaska Native land rights. ANCSA created 12 regional corporations and over 230 village corporations, which were established to receive money and manage lands on behalf of their shareholders. ANCSA required that in order for Alaska Natives to receive ben-

efits from the settlement, they needed to enroll by submitting an application to the Bureau of Indian Affairs (BIA). The BIA then assigned which regional corporation an applicant would be enrolled in.

### **JB: Does the US Federal Government have any influence on or involvement in the affairs of Calista?**

**Joseph:** The Small Business Administration's (SBA) Office of Government Contracting & Business Development works with federal agencies to award at least 23 per cent of all prime government contract dollars to small businesses and help federal agencies meet specific statutory goals for small disadvantaged businesses, women-owned small businesses (WOSB), service-disabled veteran-owned small businesses (SDVOSB), and small businesses that are located in historically underutilised business zones (HUBZ).

In addition, SBA's Business Development Program assists eligible socially and economically disadvantaged individuals in developing and growing their businesses through one-on-one counselling, training workshops, matchmaking opportunities with federal buyers, and other management and technical guidance.

### **JB: Nature and the extent of services Yulista Holding Family of Companies (YHL) provides in the aerospace and also the regular customers' base?**

**Joseph:** Yulista Holding LLC provides professional management and business support services to the YHL family of companies: Chiulista Services Inc; Yulista Aviation Inc; Yulista Management



(LEFT) BELL 407 COMMERCIAL VERSION; (RIGHT) UPGRADED FOR MILITARY APPLICATIONS

Services Inc.; Y-Tech Services Inc; Tunista Services LLC; Yulista Integrated Solutions LLC; and Yulista Tactical Services LLC. Our resources and expertise in management oversight, technical services, finance, human resources, and administrative support provide stability to our innovative teams.

Our companies provide a wide range of services to both government and commercial clients. Our core services and support areas are aviation, ground, logistics, training, and base operations support. Within these core support areas, we perform aerospace engineering and test services, manufacturing and fabrication, system integration, training services, logistics services, and base and camp services.

Our clients are:

- US Army, Navy, Marines, Coast Guard and Air Force.
- US Departments of State, Homeland Security and Defense.
- Civil Aviation Customers.
- Foreign Military Customers: Honduras, Mexico, Canada, Chili, Columbia, Czech Republic, Germany, Netherlands, Sweden, Egypt, Morocco, Afghanistan, Bahrain, Iraq, Israel, Jordan, Kuwait, Pakistan, Qatar, Saudi Arabia, Turkey, UAE, Yemen, Indonesia, Japan, South Korea, Taiwan, Thailand and Australia.

**JB: The major achievements of the Yulista family of companies?**

**Joseph:** Our contract teams on the Prototype Integration Facility contract have been awarded numerous Army Top 10 Innovations Awards for our support on high-profile programmes such as A2C2S (Army Airborne Command and Control System) integration onto the Sikorsky Blackhawk platform.

**JB: Would you like to elaborate on your role in Afghanistan and Iraq?**

**Joseph:** Yulista provides contract field teams and aviation platform upgrades. Our recent work for Iraq included militarising a commercial Bell 407 and installing multiple component and armament upgrades. Our team delivered three aircraft and provided kits for over 10 aircraft.

**JB: Key objectives of Yulista towards the domestic (US) and the international market?**

**Joseph:** Yulista has built a strong presence in the small business communities in the United States. As with the domestic markets, we provide the same services to our international customers. Yulista performs the same large company services

for the price of small businesses while maintaining high quality solutions and deliverables.

**JB: Yulista Aviation has presence in Afghanistan, Iraq, Germany and Korea. What are your activities in these countries?**

**Joseph:** Yulista provides contract field teams and representatives to provide training and modification assistance on multiple aviation and ground vehicle platforms.

**JB: Which cargo helicopter Yulista Aviation has built a simulator for?**

**Joseph:** CH-47F. Yulista provided PM Cargo the engineering, manufacturing and aviation integration facilities for five Build-to-Print CH-47 Transportable Flight Proficiency Simulator (TFPS) Systems. This hardware/system deliverable of a Department of Defense (DOD) Acquisition Category (ACAT) 1D major weapon system training support device is required to train army aviation/military pilots prior to deployment to wartime operations.

These simulators require a bill of material of over 2,000 line items, manufacturing and assembly of approximately 1,000 metal components, modification or manufacture of more than 500 wire harnesses and/or cable assemblies, and complex installation of electrical and mechanical components. These transportable simulators include an assortment of COTS (commercial-off-the-shelf) components, aircraft components, and state-of-the-art graphics. The seventh foreign military sales (FMS) unit is currently in production for the Australian Army.

**JB: Services provided by Yulista Management Services Inc in the field of military and civil aviation as well as for the land and marine forces?**

**Joseph:** Yulista provides engineering, manufacturing and fabrication, system integration and training for civil aviation, land and marine forces. Yulista is experienced in providing shelter and component upgrades for marine vehicles, including the MK-18. Yulista is an industry leader in the modernisation and service life extension of military weapons systems, ground combat systems, ground sensor and surveillance systems, and associated ground support equipment. Yulista has a full range of capabilities to support ground combat vehicles through modification and technology insertion. capabilities include design, prototyping, fabrication, integration, and sustainment.

Our civil aviation sector offers a full spectrum of services





MI-17 HELICOPTERS; (INSET L-R) MI-17 ENGINE AND MI-17 FCU

that includes hangar storage, fleet maintenance programmes, contract maintenance services and field support.

**JB: What kind of aviation support is Yulista providing to the US Government?**

**Joseph:** Yulista is a recognised industry leader in the modernisation and service life extension of rotary- and fixed-wing aircraft. YAI has extensive experience with both military and commercial aircraft. YAI is an FAA Part 145 Repair Station.

Yulista has extensive experience in design, development, fabrication, assembly and integration of aviation modifications. YAI employs FAA licensed aircraft mechanics and electricians with specialties in wiring, sheet metal painting, component troubleshooting, and installation. YAI also has contact field teams for kit installation at remote locations.

**JB: What kind of modifications does Yulista undertake on military platforms and how unique are the modifications?**

**Joseph:**

- Engine
- Airframe
- Communications
- Survivability
- Sensor Packages
- Avionics Upgrades
- Technology Insertion
- Aircraft Reset
- Prototype Development
- Platform Integration
- Electronics Upgrades
- Test, Validation, Verification and Limited Production
- Unit, Intermediate, and Depot Level Maintenance and Repair of both Rotary- and Fixed-Winged Aircraft
- Reset and Preset Operations
- Sustainment Solutions
- Overhaul and Repairs
- Scheduled/Unscheduled Maintenance
- Phase Maintenance
- Hangar Storage
- Aircraft Refurbishments
- Avionic Upgrades/Replacements
- Ballistic Protection
- Communication Upgrades/Integration
- Corrosion Control and Prevention

- Maintenance Stands and Ground Support Equipment
- Paint & De-Paint Operations Support

**JB: Little bit about the Yulista's global plans. Does the company set up service support facilities in countries other than the US?**

**Joseph:** Our current plans are focused on the Middle East, India and the Far East. We intend to penetrate these markets by establishing in-country global partnerships.

**JB: What possibilities do you intend to see in India?**

**Joseph:** We see numerous opportunities in the aircraft (rotary-wing and fixed-wing) and combat vehicle (tracked and wheeled vehicle) modification and technology insertion markets.

**JB: Will Yulista bring the finest state-of-the-art solutions to India? Any scope of embargo if at all from US side?**

**Joseph:** Yulista will support industrial development with the latest state-of-the-art manufacturing and fabrication processes. We don't see any issues with US embargos.

**JB: Militarily, what are the offerings Yulista may like to pursue in India?**

**Joseph:** Rotary-wing, fixed-wing and ground vehicle modifications and technology insertion.


**JB: Are your solutions confined to equipments manufactured in US only or can cover those which are of Russian origin?**

**Joseph:** We can also do modifications and technology insertions on Russian and European rotary-wing and fixed-winged aircraft.

**JB: Will Yulista have any kind of specific solutions for civil aviation fronts too?**

**Joseph:** Our primary focus will be supporting India's military services with our in-country global partner(s). However, our capabilities can be readily applied to the private aircraft modifications and technology insertion market.

**JB: In homeland security, what are the services provided by Yulista?**

**Joseph:** Again, a majority of our homeland security services are centred around aircraft and ground vehicle modification and technology insertion solutions. 



# 'SKYDECK' DOME WITH A VIEW

The experience of flying is taking on new dimensions. The latest announcement coming from Windspeed Technologies, based in US, of a futuristic concept of a 'SkyDeck' which will provide a truly amazing experience. The 'SkyDeck', a safe semi-external dome kind of location on the aircraft, will give the passenger a 360-degree view. Such a concept offers unimaginable travelling in the night and a kaleidoscopic view of the moon and the stars. **Jayant Baranwal**, Editor-in-Chief of **SP's Aviation**, gets an exclusive opportunity to chat with **Shakil Hussain**, the President and CEO of the company, which is working continuously on innovations for the aviation sector.



**THRILLS IN THE SKIES:**

'SKYDECK' CONCEPT (DESIGNED BY SHAKIL HUSSAIN - ABOVE, PRESIDENT & CEO OF WINDSPEED TECHNOLOGIES) PROPOSES TO OFFER AWESOME 360-DEGREE VIEWING DOME WITH ROTATING CHAIRS TO THE PASSENGERS ON PAY-PER VIEW BASIS.

**EXCERPTS:**

**SP's Aviation (SP's):** When was the idea for 'SkyDeck' first conceived?

**Shakil Hussain (Hussain):** It was conceived around mid-2014 and as of April 2015 the design is Patent Pending.

**SP's:** When was the final design completed and the idea announced?

**Hussain:** We have completed the conceptual design phase at the moment and will start the final design phase as soon as we have confirmed orders. The idea was made public in May 2015.







“THE UNIQUENESS OF THE DESIGN IS THAT IT ALLOWS PASSENGERS TO SAFELY POSITION THEMSELVES AT A SAFE SEMI-EXTERNAL LOCATION OF THE AIRCRAFT WHILE ENJOYING A THRILLING VIEW”

**THRILL AWAITS ON THE TOP:**

(LEFT) STAIRCASE VERSION OF 'SKYDECK' IS THE LESS EXPENSIVE VERSION. THIS CAN EITHER BE ACTIVATED BY AN ELECTRO-MECHANICAL SYSTEM OR CAN BE MANUALLY LOWERED AND STORED WITH A HYDRAULIC-ASSIST SYSTEM. FOR SMALLER JETS SUCH AS B737, A320, GULFSTREAM, ETC., A SINGLE SEAT SKYDECK WITH A STAIRCASE VERSION IS RECOMMENDED. (BELOW) DESIGN PATENT AS ON MARCH 31, 2015

**SP's: What was the design process like? Can you elaborate on the foreseeable hurdles?**

**Hussain:** Many design hurdles had to be overcome including structural modification, structural integrity of the canopy to withstand a birdstrike and flight loads, condensation, noise levels, UV protection, aerodynamic drag, potential disruption to the vertical tail's performance, safety, ingress and egress requirements per the FAA requirements, etc. We have succeeded in resolving all of these concerns. Considering the fact that Windspeed has been highly involved in major aircraft development programmes such as the B787-8, 787-9, 787-10 and the new 777X, the engineering needed for the SkyDeck is pretty straightforward.

**SP's: What materials are used to make the SkyDeck?**

**Hussain:** The elevator and staircase versions will basically be

made of FAA-approved high strength aerospace grade aluminium alloy while the canopy will be made of the same high strength proprietary material as those used on supersonic fighter jets. The canopy will be made by a manufacturer who specialises in manufacturing fighter jet canopies.


**SP's: What design / technology / safety features does the SkyDeck have?**

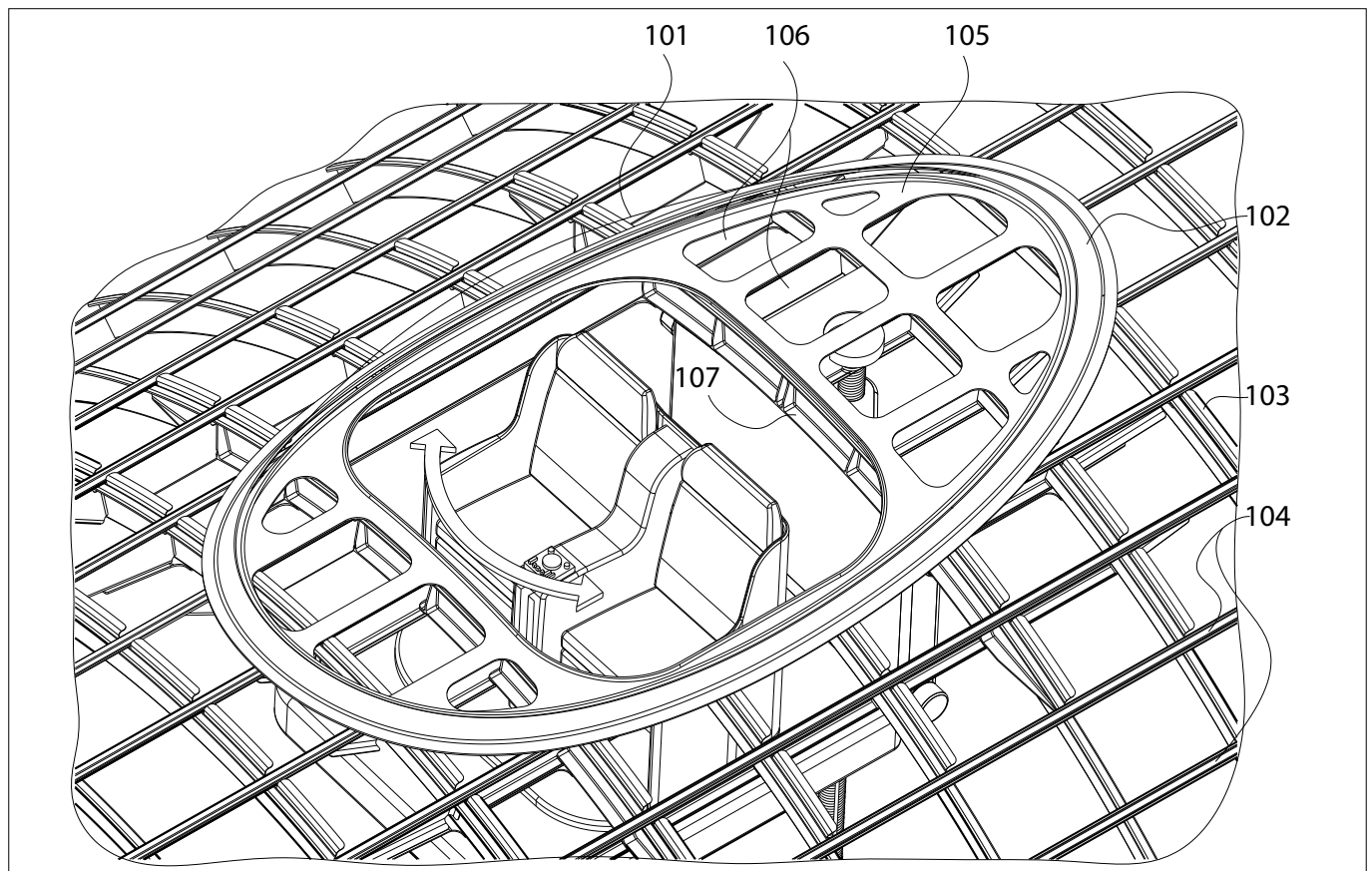
**Hussain:** The uniqueness of the design is that it allows passengers to safely position themselves at a safe semi-external location of the aircraft while enjoying a thrilling view. In addition, GPS systems will be integrated in the design of the platform and seats to provide the viewer with real-time position and flight information. The rotatable seats will come with seat belts and the complete SkyDeck will be designed to withstand all load requirements of the FAA.

**SP's: What will be the cost of installing the SkyDeck?**

**Hussain:** Between \$8 million and \$25 million.

**SP's: When do you expect to begin rolling out the first SkyDecks?**

**Hussain:** We have not received any orders yet. We, however, expect the first SkyDeck to roll out about 18 months from receipt of order. The aircraft down time will however be much shorter for the installation and test phase which is about 3-4 months. 



AVIATION EXPERT

## INTERESTING BUT CHALLENGING



**AIR MARSHAL  
B.K. PANDEY (RETD)**

The concept of 'SkyDeck' is indeed unique and will certainly add value to airliners as well as the business jets. Technologically, there will be many challenges including in its design, fabrication, installation and its maintenance.

The regulatory agencies themselves would have to formulate rules and procedures to cater for the imponderables of this

innovation which could expose its occupants to some unforeseen hazards. For commercial aviation, it could be a new source of revenue.

The OEMs who would wish to integrate this concept on their aircraft will be required to cope with the new technological challenges. And above all, safety of the aircraft and passengers on-board will be of primary concern for all stakeholders. **SP**

JOURNALIST/TRAVELLER

## "FUN" OF FLYING



**R. CHANDRAKANTH**

'SkyDeck' is certainly going to transform the way some airline/corporate jet passengers may travel in the near future. Seated in a safe semi-external location on the aircraft, the passenger is promised of a totally new and thrilling experience.

With passengers becoming more and more discerning, airlines need to introduce a whole

lot of factors which not only improve efficiencies on the modern airplane, but also make flying fun. 'SkyDeck' with a 360-degree view has all the potential of adding 'fun' to flying. Accordingly, the airline industry is witnessing several innovations wherein design is becoming prime, driven by the need to make the passenger comfortable, give a new experience and also create new avenues of revenue for the airline or operator, *per se*. The new concepts such as 'SkyDeck' are more than welcome. **SP**

## DEPLETING ASSETS.....Continued from page 11

The indigenous Rustom medium-altitude long endurance (MALE) UAV is yet to be operationalised and inducted into the armed forces.

### AIR DEFENCE SYSTEMS

The Pechora and OSA SAMs of Russian origin are nearing the end of their lives and the IAF is making efforts to procure the S-400 Triumpf SAM from Russia which would tackle threat from ballistic missiles as well as fighter and bomber aircraft. The IAF has also placed orders for the Akaash medium, range SAM from the Defence Research and Development Organisation/Bharat Dynamics Ltd which will ensure that the Pechora replacement is on track. The Israeli Spyder short-range SAM will be the OSA replacement. In a few years time, the successful culmination of efforts by a new joint development by Israel and DRDO which will enhance the IAF's SAM capability even further. Air defence guns being handled by the Army are likely to see new inductions soon. Hence, even in the area of air defence, the IAF is taking all the necessary steps to cater to threat from adversaries.

### HUMAN RESOURCE DEVELOPMENT

The acid test of the capability of IAF's human resource is when they interact with foreign air forces where IAF personnel right from World War II days till now have made the nation proud in giving an excellent account of themselves, be it in Exercise Cope Thunder involving six Jaguar aircraft, IL-76 mission to Alaska or Exercise Garuda in Gwalior with the USAF, the air warriors of the IAF have displayed the highest standards of professionalism, able to not only cope, but at times, have proved to be the best of the best! Their sustained record of performance reflects the high standards of training in the IAF.

### MAKE IN INDIA

The thrust by Prime Minister Narendra Modi at 'Make in India' is truly pathbreaking, but needs focus on certain areas namely organisation, reliability and maintainability. The Indian Navy since independence has been more successful in its efforts at indigenisation than the IAF. The principal reason is the establishment of the Directorate of Warship Design and Production under the control of Naval Headquarters. This has ensured single-point accountability and responsibility with Naval Headquarters and the next is in programme management where naval officers are deputed to manage and drive the warship design and production. This pattern should be adopted by the IAF as well and will pay rich dividends. The aspect of reliability and maintainability is generally forgotten by the Defence Research and Development Organisation. Even if an aircraft, missile or radar is ready for induction albeit with performance shortfalls, its high reliability and maintainability will ensure that it will be available to the commander for deployment and use in the field. This needs the setting up of a Directorate of Aircraft Design and Production at Air Headquarters so that weapons systems development and their time-bound production are monitored effectively.

### CONCLUSION

The Standing Committee on Defence has rightly brought to the notice of the government the urgent need to replenish the depleting fighter fleet of the IAF. While it can be seen that the IAF is doing its best, the situation will remain critical till 2020 or even up to a later date. The government needs to sanction the establishment of a Directorate of Aircraft Design and Production at Air Headquarters at the earliest and thus help Prime Minister Modi's vision of 'Make in India' to become a reality. **SP**





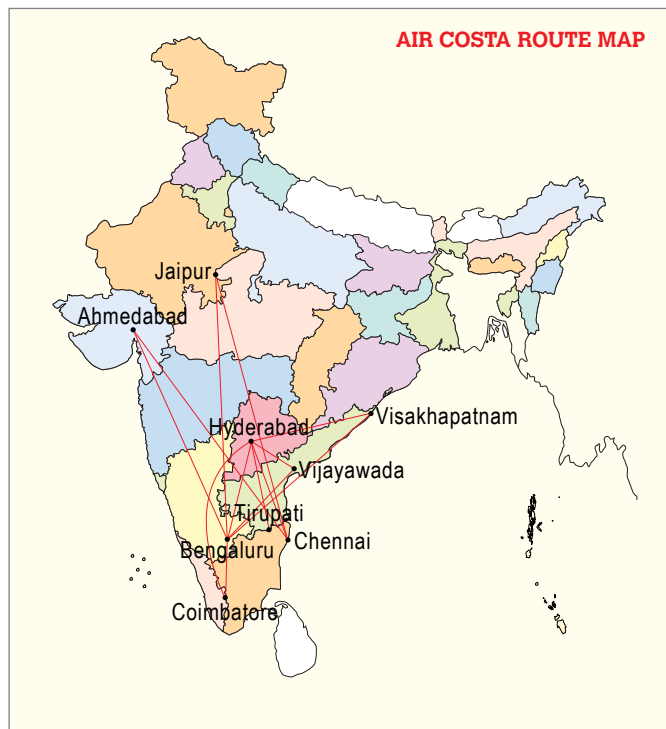
**IN THE LEAD:** AIR COSTA IS ONE OF THE MAJOR PLAYERS WORKING TOWARDS THE UN-SERVED MARKETS IN INDIA

# TAPPING INTO UNDER-SERVED & UN-SERVED MARKETS

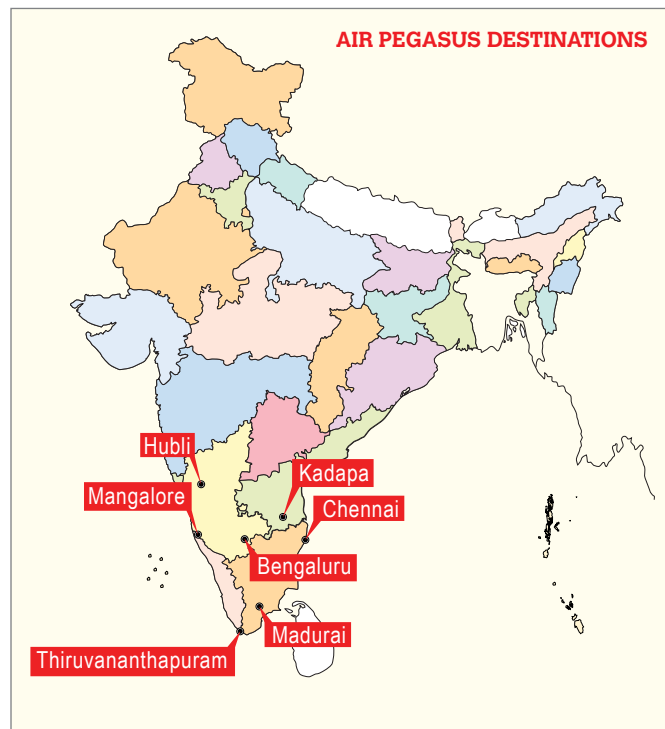
Civil Aviation Ministry in its draft Policy has clearly mentioned in its objectives that it intends to enhance regional connectivity through fiscal support and infrastructure development

BY R. CHANDRAKANTH

PHOTOGRAPH: KARTHIK KUMAR



Source: Air Costa



Source: Air Pegasus

**THE TOP 10 AIRPORTS** of Delhi, Mumbai, Bengaluru, Chennai, Hyderabad, Kolkata, Kochi, Ahmedabad, Pune and Dabolim contribute almost 80 per cent of the passenger traffic in India. The rest is accounted for by the other 70 destinations that airlines, including regional airlines, connect to. It certainly is skewed in favour of the major cities. According to the 2011 census, there are 270 cities in the country with a population of over one lakh, of which about 50 cities can be termed as 'Million Plus' cities with population of over a million. While the megapolises are bursting at their seams, the Tier-II and III cities are also expanding at quite a pace. As these cities are witnessing unbridled growth, the Narendra Modi Government has embarked upon '100 Smart Cities' project, which will factor in aviation.

This is likely to spur frenetic economic activity in many regions. If some of the regions house, special economic zones (SEZs) then it goes without saying that the SEZ success or failure depends totally on the multi-modal transportation network. Airport and port connectivity is going to play a crucial role in economic development and planners are cued into it.

Having realised this potential, the Ministry of Civil Aviation (MoCA) is laying emphasis on regional connectivity and policies are getting formulated with that in mind. The MoCA in its revised draft National Civil Aviation Policy has clearly mentioned in its objectives that it intends to enhance regional connectivity through fiscal support and infrastructure development. Already 50 smaller airports have been identified for further development and they are in various stages of implementation. Once the smaller airports become operational (of the 426 airports in the country, about 90 are said to be operational for different kinds of aircraft) for regional airlines and also for general aviation / business aviation, the sector is going to witness unprecedented domestic passenger growth.

#### THE MANDATORY RDG

Presently, thanks to the route dispersal guidelines (RDG) of the MoCA, airlines are flying to destinations which may not be that lucrative for business, particularly if one is deploying an aircraft which is not suited for the market. Regional aircraft – be it a turboprop or a regional jet—is the answer to begin with to tap the un-served and under-served markets. It certainly requires nurturing by not just the government but also the other stakeholders.

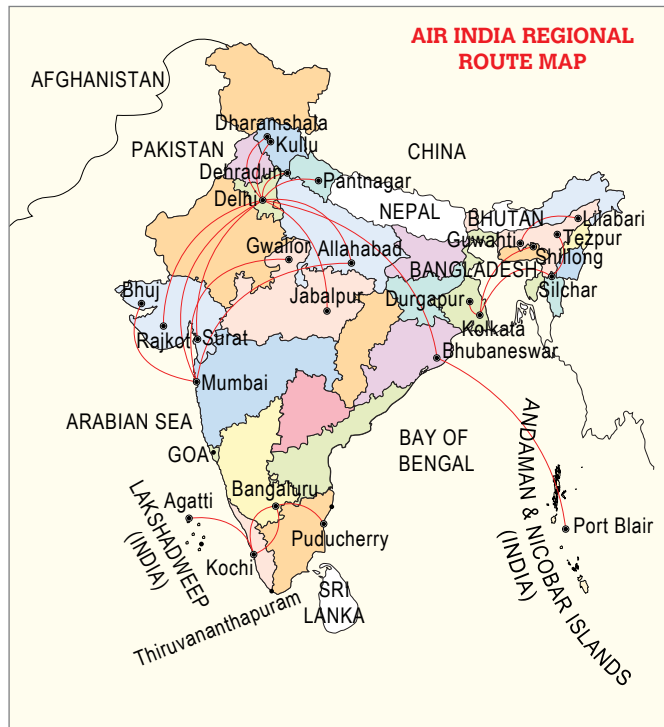
As per the RDG, routes have been classified as Category I, II, IIA and III. In Category I there are 30 routes including all large metropolitan cities and Category II routes are in remote areas, Category II intra-remote areas and Category III are routes not covered by the first three categories. To comply with these norms, an airline has had to rethink on its business model. It has to have a proper mix of aircraft – single aisle aircraft such as the Boeing 737 or the Airbus A320 (which in underserved and unserved markets would make no sense at all) to regional aircraft such as ATRs and Embraer E-Jets with less than 100-seating capacity. While the intention of RDG has been good, lack of infrastructure (airport facilities, proper road network to the airports, lower cost for airlines etc) has hampered the growth of regional aviation. It is only now that the government is serious of regional connectivity and if it promotes regional aviation, then it could do away with RDGs which has been eroding airline profitability. Regional airlines can fill that gap.

#### REVISED RDG

RDG has succeeded in creating connectivity to remote locations. Capacity actually deployed on Cat II and III is in excess of the RDG threshold, highlighting the business potential in these regions.

The revised draft policy envisages:

- Category I routes will be rationalised by adding more routes



Source: Air India

It operates air services with leased fleet of 3 CRJ (70 seater), 4 ATR 42-320 (48 seater) and 5 ATR 72-600 (70 seater) aircraft with base stations in Delhi, Bengaluru, Kolkata, Hyderabad and Mumbai. These flights are operated mostly to Tier-II and III cities or those which link these cities to the metro hubs. Air India Regional has 226 (including schedule charter) flight departures per week and 32 flight departures per day. Air India Regional provides connections to international stations through its hubs.

#### AIR COSTA THINKING OF HUB-BASED REGIONALS

The next regional airline – Vijayawada-based Air Costa connects nine destinations (Vijayawada, Hyderabad, Vizag, Tirupati, Bengaluru, Chennai, Coimbatore, Ahmedabad and Jaipur). At the time of writing it had a depleted fleet level of two Embraer E-190 with two E-170s having been returned to lessors recently. The company has plans of going national and would require a minimum of five aircraft and it has planned accordingly. In fact, in October 2014 during its first anniversary celebrations, its Chairman Ramesh Lingamaneni had talked about connecting regional destinations from various hubs in the other three zones. With Air Costa and the other two regional players – Air Pegasus and Trujet – Southern India seems fairly connected by regional aviation Air Costa has announced that it has got the no objection certification from MoCA for pan-India operations and that it would be starting the same in summer of 2016. The new destinations it will be connecting include Delhi, Pune, Bhubaneswar and Varanasi.

#### SOUTH WELL CONNECTED

Air Pegasus with two ATR aircraft has on its route map the following cities – Bengaluru, Hubli, Madurai, Mangaluru, Chennai, Thiruvananthapuram and Kadapa. Turbo Megha Airways (Trujet) with one ATR is connecting Bengaluru, Chennai, Hyderabad, Aurangabad, Rajahmundry, Goa and Tirupati. And another regional airline FlyEasy which is waiting for its air operators permit has indicated that it would fly to Bhubaneswar, Goa, Guwahati, Amritsar, Surat and Pune. But if one looks at the connectivity of all these regional players, it appears that they are focused on secondary markets and these markets are not under-served, least of all un-served. None of them has shown any indication of tapping into the un-served markets. Nevertheless, if they are going to service the under-served markets, one can expect a lot more passenger movement from these cities. The need to grow these markets has been understood but then these players should have a strategy in place to tap into the market, giving competition to rail-road.

#### AIR INDIA REGIONAL GETTING AGGRESSIVE

Considering the policy proposal, some of the airlines are already mulling the idea of starting regional services. Air India Regional (formerly Alliance Air) is becoming lot more active and it is connecting the destinations of Dharamshala, Kullu, Pantnagar, Dehradun, Rajkot, Surat, Allahabad, Jabalpur, Bhubaneswar-Port Blair (from Delhi); Bhuj, Allahabad and Gwalior (from Mumbai); Durgapur, Shillong and Silchar-Tezpur (from Kolkata); Puducherry and Kochi-Agatti (from Bengaluru) and Guwahati-Lilabari.

HAVING REALISED THE  
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#### 80 DESTINATIONS COVERED

In fact, if one looks at the airline connectivity map, it is fairly impressive, connecting 80 destinations from the North to the South, from the West to the East, particularly North-East. However, the frequency of flights from some of the destinations may be limited as the airlines are in the chicken and egg syndrome. The issue is who is going to cultivate these new markets. Obviously, it has to be a joint effort, just deploying aircraft when facilities are not there seems a futile exercise.

As such the full-service airlines and the low-cost carriers, under the mandatory



**VENTURING INTO THE GAME:**

THE NEW STARTUPS SUCH AS FLYEASY COULD BE YET ANOTHER AIRLINE TO CONTRIBUTE TOWARDS REGIONAL CONNECTIVITY WITH THEIR PROPOSED FLEET OF EMBRAER E190



RDG have on their radar many small cities but at the moment they may be unprofitable routes, but the airlines need to stake it out or get aggressive in marketing. Air India connects 66 domestic destinations including Srinagar, Leh, Kullu, Amritsar, Jammu, Chandigarh, Dehradun, Pantnagar, Delhi, Agra, Jodhpur, Jaipur, Udaipur, Gwalior, Allahabad, Lucknow, Patna, Gaya, Bagdogra, Kolkata, Durgapur, Ranchi, Guwahati, Tezpur, Shillong, Silchar, Agartala, Aizwal, Imphal, Dimapur, Dibrugarh, Lilabari, Jorhat, Indore, Bhopal, Khajuraho, Varanasi, Raipur, Vadodara, Ahmedabad, Jamnagar, Mumbai, Surat, Rajkot, Aurangabad, Nagpur, Jabalpur, Bhubaneswar, Pune, Hyderabad, Bengaluru, Visakhapatnam, Port Blair, Vijayawada, Goa, Mangalore, Tirupati, Chennai, Puducherry, Tiruchirapalli, Madurai, Kochi, Agatti, Kozhikode, and Thiruvananthapuram.

Jet Airways connects 51 domestic destinations such as Ahmedabad, Aizawl, Amritsar, Aurangabad, Bagdogra, Bengaluru, Bhavnagar, Bhopal, Bhuj, Chandigarh, Chennai, Coimbatore, Dibrugarh, Dehradun, Delhi, Diu, Goa, Gorakhpur, Guwahati, Hyderabad, Imphal, Indore, Jaipur, Jammu, Jodhpur, Jorhat, Khajuraho, Kochi, Kolkata, Kozhikode, Leh, Lucknow, Madurai, Mangalore, Mumbai, Nagpur, Patna, Porbandar, Port Blair, Pune, Raipur, Rajahmundry, Rajkot, Silchar, Srinagar, Thiruvananthapuram, Tiruchirapalli, Udaipur, Vadodara, Varanasi and Visakhapatnam.

And India's number one low cost carrier, IndiGo connects to Srinagar, Jammu, Delhi, Jaipur, Chandigarh, Lucknow, Patna, Varanasi, Udaipur, Jaipur, Ahmedabad, Vadodara, Bagdogra, Guwahati, Dibrugarh, Imphal, Dimapur, Agartala, Kolkata, Ran-

chi, Indore, Nagpur, Raipur, Bhubaneswar, Hyderabad, Mumbai, Chennai, Pune, Visakhapatnam, Goa, Bengaluru, Coimbatore, Kozhikode, Kochi, Thiruvananthapuram,

SpiceJet's destinations include Srinagar, Jammu, Dharamshala, Amritsar, Chandigarh, Dehradun, Delhi, Lucknow, Jaipur, Allahabad, Varanasi, Khajuraho, Udaipur, Bhopal, Jabalpur, Kolkata, Bagdogra, Guwahati, Agartala, Surat, Indore, Aurangabad, Mumbai, Pune, Hyderabad, Visakhapatnam, Rajahmundry, Vijayawada, Hyderabad, Belgaum, Goa, Hubli, Bengaluru, Chennai, Tirupati, Mangalore, Mysore, Coimbatore, Puducherry, Kozhikode, Tiruchirapalli, Kochi, Madurai, Thiruvananthapuram and Tuticorin.

GoAir connects Srinagar, Jammu, Leh, Delhi, Chandigarh, Lucknow, Jaipur, Bagdogra, Patna, Guwahati, Kolkata, Ranchi, Ahmedabad, Nagpur, Bhubaneswar, Mumbai, Pune, Goa, Bengaluru, Chennai and Kochi and Port Blair. Air Vistara routes are Delhi, Lucknow, Bagdogra, Varanasi, Ahmedabad, Kolkata, Guwahati, Bhubaneswar, Mumbai, Chennai, Hyderabad and Bengaluru. And AirAsia is networked to Chennai, Bengaluru, Kolkata, Tiruchirapalli and Kochi.

All put together, 80 destinations are covered by these players and yet many routes are unviable and the reasons for that are many. The RDG came into being to provide better connectivity to remote regions particularly the North East, Jammu & Kashmir and the Andaman & Nicobar Islands. The intention of the government is simple – connect the regions. However, it needs to incentivise the stakeholders to develop the market. It appears the government is listening. **SP**

# LOAN OR LEASE, DUE DILIGENCE IS MUST

In India there are several companies which offer financial services for private aircraft purchase. Both need to do due diligence before deciding on the aircraft and the finance route as the sector is high-risk business.



BY R. CHANDRAKANTH



ILLUSTRATION: ANOOP KAMATH



**LIKE ANY OTHER HIGH** asset acquisition, the financing routes available to buy a private or a business aircraft are own source of funds; secured loans from banks and other financial institutions; and lease. On the market there is availability of both new and used aircraft and there are aircraft management companies that can help out in acquisitions. A very light jet can cost up to \$1.5 million and a large jet such as a Boeing Business Jet or an Airbus Corporate Jet may go upwards of \$70 million, depending on what you are going to be fitting on the luxury jet.

Besides the regulatory process of licensing and acquiring an aircraft, one of the most important aspects is how to finance the acquisition of the same. Depending upon usage and ones' own capacity to buy an aircraft, the choice can be made from a cash down kind of payment to a loan or a lease.

However, importing an aircraft into India is no joke by all means. One has to go through several processes of the Ministry of Civil Aviation and heartburns before one can really get the aircraft delivered. If a company is buying for non-scheduled operations, then it has to convince the lending institution on the viability of the business and in this case the charter business is a high-risk business. Any financing comes with a price. Majority of the business jet imports that are happening in India are for corporate and their captive charter company.

Leasing of private jets by NSOPs is a good option as it is less capital intensive. Depending upon the business model and how the company operates, the lease rentals can be repaid from the revenues generated. Besides, in leasing it is easier to get an aircraft, particularly used or those on the inventory of the leasing company. The time involved in delivery of leased aircraft is much less than acquiring a new one which certainly will have a waiting period.

#### **TYPES OF LEASE**

In aircraft financing there are two types of leases—dry and wet. A wet lease means operating lease of aircraft along with insurance, crew, maintenance etc, while a dry lease entails leasing of aircraft without the attached accompaniments. While a wet lease is primarily an operating lease, a dry lease can be an operating or a finance lease. Finance lease typically involve transfer of aircraft to the lessee after completion of the lease term. The lending agencies do a thorough check of the aircraft that is being bought as well as that of the person or company that is going to buy the same. The lender normally performs an appraisal of the aircraft's value and in case of used aircraft, the lender does a title search based on the aircraft's registration number as to ensure that there are no liens or title defects. After satisfying the documentation, the lender prepares documentation for transaction which may include a security interest on the aircraft (to repossess the aircraft in case of default).

There are companies which do hand-holding in aircraft acquisition and that really helps corporate to stay focused on their mainline of business. The corporate has to indicate what kind of aircraft and for what purpose and what kind of usage it is likely to have to these aircraft management companies. Aircraft valuation is a critical element before one goes to the lending institutions. These processes do take time and hence it is suggested that the delivery is planned according to the processing time. Certainly, lend-

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#### **OPTIONS ARE PLENTY:**

THE BUYER HAS TO DO AS MUCH HOMEWORK AS POSSIBLE BEFORE DECIDING ON THE RIGHT KIND OF AIRCRAFT AS THEY RANGE RIGHT FROM \$ 1.5 MILLION PER VERY LIGHT JET (VLJ) TO \$70 MILLION FOR A HIGH-END AND ULTRA-LUXURIOUS JET (SUCH AS ACJ319 SEEN HERE ON FACING PAGE), THE RIGHT KIND OF FINANCING AND THE RIGHT KIND OF BUSINESS MODEL.

ing depends on the creditworthiness of the individual or the corporate, as the case may be. The lending institution is going to do its due diligence – on the borrower, the company, the aircraft selling entity and the underlying purchase deal. It will want to see tax returns, financial statements, the purchase agreement, the pre-buy report – all kinds of things.

#### **DEBT-SERVICING**

Besides valuation and the amount that you intend to borrow or the route of financing – loan or lease – one of the key components is debt servicing. There are fixed and floating rates of interest with a term and a down payment. So it is essential to do a lot of homework and see how the lending is 'manageable'.

According to a report, the simple aspect to keep in mind is that a 100 per cent 12-year loan on an 18-year-old aircraft with 25-year amortisation will find few takers, but an 80 per cent five-year loan on a five-year-old aircraft with 10-year amortisation may make good business sense.

#### **GE CAPITAL MAJOR PLAYER**

In India there are several companies which offer these financial services for aircraft purchase. GE Capital is one of the leading providers of corporate aircraft financing. There have been recent media reports that it would sell its fixed-wing corporate aircraft financing business in the Americas to Global Jet Capital, a provider of financing for the private aircraft market. GE Capital provides financing for acquisition of corporate jets, turboprops and helicopters.

With a global portfolio of over 2,000 aircraft and more than \$25 billion in transactions around the world, GE Capital is one of the leading providers of corporate aircraft financing. GE Capital India leverages that expertise and the relationships with manufacturers and industry specialists to deliver flexible finance solutions to customers in India. It understands legal and regulatory environments and has access to a worldwide affiliate network to provide best financing solutions. GE Capital India offers loans and leases including pre-delivery payment financing and upgrade financing.

It provides operating leases to finance leases for corporate aircraft to help companies optimise cash flow by managing its balance sheet and cash reserves. Since aircraft is generally owned by the lessor, it is not included on a business balance sheet. This improves debt-to-equity ratios and the business' overall credit position.

GE Capital states that some of its customers own their aircraft and, in some cases, the asset has built up equity. These customers may be deferring the tax benefits of ownership. Through a sale-






leaseback, GE offers its customers the opportunity to sell their aircraft to GE and then immediately lease the aircraft back, maintaining the right to use the asset, allowing the equity tied up in aircraft to be better utilised elsewhere.

GE Capital also offers loans and customers can build equity with every payment. It offers multiple secured loan options, including refinancing. It also makes down payments required by the manufacturer while the customer awaits delivery of the aircraft. GE charges only interest until delivery of aircraft.

Similar to GE, there are few other companies which provide financial services to aviation industry. CAPA ventures is a capital advisory firm which helps clients raising debt or equity funding. It also supports aircraft acquisition and leasing initiatives. CAPA Ventures works with local and international investors, including

banks, leading private equity funds, corporate houses and high net worth individuals to identify suitable partners. According to reports, CAPA India was planning to raise proprietary capital with principal investors based in North America and Europe and also to establish a dedicated aviation fund.

Airnetz is another entity which facilitates in getting aircraft loans for new and used aircraft starting at \$75,000 in value. It has flexible individual financing programmes with low interest rates, terms up to 20 years, personal service, quick approvals and fast fundings.

All said and done, the buyer has to do as much homework as possible before deciding on the right kind of aircraft, the right kind of financing and the right kind of business model. The aviation industry has a high burnout rate, thus calling for the brave-hearted and those with business acumen. 

PHOTOGRAPH: AIRBUS

BOEING BUSINESS JETS 787

# COOL, COMFY AND CLASSY

Design is a tool that, when used from the outset, can enable airlines to deliver a better service

BY R. CHANDRAKANTH

**OF ALL THE MODES** of mass transportation, the basic comfort standards of an airplane are high, if compared to rail or ship or some other surface transportation. In a bus or train or even a ship, you could just have ordinary seats fitted in and go about your operations. But in an airplane by the very nature of its business, even in low-cost carriers there is attention given to interiors. And when it comes to corporate or private jets, it takes a different dimension, depending upon the company and depending upon the individual and more importantly depending on the money that is going to be spent on making things look cool. There cannot be a truer statement than what Gulfstream mentions that an aircraft and its interiors reflects that the owner has navigated to a level of success few others have attained.

That makes the corporate aircraft manufacturer stay on his feet to know trends in design, cabin comfort and luxury fittings, etc. Innovations in business jets or turboprops are happening more at the cabin level, wherein passengers are given a hotel-like experience with bathrooms, lounge area, office space,

entertainment zone and even a bar. These aircraft interior trends can be seen at its best during the Aircrafts Interior International Fair which happens in Hamburg, Germany.

Professor Richard Seymour, founder Seymourpowell, one of Europe's most well-known and accomplished designers, has rightly said that the aircraft interiors industry must also learn from the innovation and imagination being employed by other sectors, citing the fashion and toy industries as examples. Not all the solutions need involve hardware, or great cost. Seymour said that an air travel trip can be fraught with numerous anxieties and uncertainties which can quite often be addressed simply and economically. Interiors come into play majorly.

PriestmanGoode, whose work I got to see on the Embraer E2 jets in Singapore sometime back states, while design today is more readily recognised as a driving force in creating better products, it is also intrinsic to the latter. Design is a tool that, when used from the outset, can enable airlines to deliver a better service.

In recent years PriestmanGoode has established its studio





FALCON 8X

as a centre for excellence in aviation design. Based in London, the team includes designers, brand specialists, CMF (colour, material and finish) experts and visualisers. To help clients elevate their brands, the studio works in close partnership with their various teams including marketing, engineering, crew and maintenance. Each team has different needs, but being able to create a product that answers all of them will help the airline deliver a better service and thus establish a top reputation in its market. On the interiors product front, our dedication to research and development and to creating bespoke products will serve airline clients well. Adopting such products demonstrates to flyers that an airline is willing to continuously invest in order to provide its passengers with the very best experience.

#### BBJ INTERIORS CHANGE AT WHIM

The custom interior of the Comlux America Boeing Business Jet offers passengers lots of choices; the plane's two interior compartments are flexible such that they can be configured in two different ways to accommodate sleeping, holding meetings, or relaxing. Some of that flexibility is due to specially designed pod seats—the first of their kind for a narrow-body aircraft. The custom seats, both singles and doubles, were created in collaboration with Iacobucci Aerospace of Italy and are tailored to provide best-in-class comfort in every position, from fully upright to fully flat. Each seat is equipped with five independent actuators for flexible, smooth

articulation. Each seat also features USB ports, cup holders, reading lights, and a privacy partition.

Maple-veneer wood paneling with accents of anigre, a tropical African hardwood, extends throughout the cabin, delivering a classic colour palette with calm, cool shades of beige and cream. Working from a brand-new Boeing Business Jet, the interior took over a year to complete. The company has not disclosed a cost for the custom interior.

#### GULFSTREAM INSIDE AND OUT DESIGNING

Gulfstream states that inside and out, a Gulfstream should reflect personal achievements and the intention to build on those accomplishments. Gulfstream refurbishment teams are ready to help owners imagine and craft an interior that incorporates the latest technologies and designs that symbolise who they are while creating a well-suited cabin environment, whether for pure enjoyment or to plan the next acquisition.

From floor to ceiling and the walls between, Gulfstream aircraft interiors offer thousands of possibilities to create a unique style and comfort. During every refurbishment, a regional sales manager and interior designer are assigned to the project to ensure that an owner's desires are fulfilled and the aircraft is completed on schedule. Each aircraft model offers multiple floorplans, which create the opportunity to configure separate cabin areas for business, entertaining or state-room privacy.

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GULFSTREAM G650

A Gulfstream designer helps define the environment and in selecting the fabrics, patterns and appointments that make concept a beautiful reality. Using a real-time technology scanner, the designer develops an immediate 3-D rendering of the interior created. Gulfstream design showrooms allow almost unlimited selections, whether it's a choice of tailored carpets, hand-stitched leather for seats or exquisitely plush fabrics for the divan.

#### Sight and sound

Gulfstream states that dramatic cabin transformations can come from subtle improvements. Lighting is one. Incandescent, fluorescent and halogen aren't the only options anymore. LED (light-emitting diode) lighting is longer-lasting, more efficient and, if desired, can be a softer, pinpoint illumination that is less disruptive to other passengers. Scientific innovation also offers an opportunity to retrofit a cabin with the latest in noise-suppressing materials.

Gulfstream has long been the industry leader for quiet cabins, but newer materials and Gulfstream's in-house testing facilities have resulted in further reductions in noise levels and vibration.

#### DASSAULT FALCON 8X LONGEST CABIN

Dassault Falcon 8X is its longest cabin. And every inch is used to advantage. With over 30 possible layouts, this is the industry's most flexible cabin and the one most likely to offer an interior solution that meets customers' exacting requirements. Noise and cabin altitude are low. Air quality is high. And connectivity is complete in this Wi-Fi environment, which is equipped with the latest FalconCabin HD+ cabin management system. Noise level is also low at a whisper-quiet 52 dB. Three extra feet can accommodate a lot more living space. The Falcon 8X provides options for a very comfortable three-lounge cabin with a shower aft and crew rest provisions forward. There are over 30 different cabin layouts from which to choose.

#### EMBRAER'S DESIGN SUITE ON A ROLL

While Embraer Executive Jets is completing only its first decade, the technology we see in each new aircraft carries the DNA inherited from the company's 45-year expertise in commercial and defence aviation. Embraer Executive Jets a few years ago unveiled its expanded design suite at its Customer Center offering another best-in-class experience for customers designing the interiors of their Phenom, Legacy and Lineage aircraft.

"Adding interior design for the Legacy 600, Legacy 650 and Lineage 1000 to the comprehensive Phenom 100 and Phenom 300 design suites is part of our effort to provide world-class design immersion on our complete line of aircraft," said Jay Beever, Vice President, Interior Design. "Our showrooms are an integral part of the Executive Jets Customer Center, which opened in December, and they provide the ultimate, state-of-the-art visualisation technology for an integrated design experience."

The Embraer Executive Jets Customer Center is designed to facilitate customer sales, design and delivery, all conveniently located in a single building. The design centres were developed by The Highland Group and designed by Julie Mandrell, owner of Viaggio Lux,

which specialises in luxury design of aircraft and yachts. Modern lines, high-contrast colours, rich woods and sculpture are integrated into the design experience.

In the Phenom, Legacy and Lineage design centres, customers receive the personal attention of their customer account manager and the Embraer design and engineering teams in developing the design using the most advanced fabrics, leathers and optional equipment for cutting-edge aircraft interiors. The team also includes configuration experts to guide clients

through the selection of materials and systems, enabling them to customise their aircraft to best satisfy their individual needs and missions.

Materials, carpets and systems cover more than 3,000 options for the Phenom, Legacy and Lineage executive aircraft. The team uses the industry's latest design tools to rapidly produce high-quality renderings of furnishings and materials to ensure they meet customer expectations. **SP**

...THAT MAKES THE  
CORPORATE AIRCRAFT  
MANUFACTURER STAY ON  
HIS FEET TO KNOW TRENDS  
IN DESIGN, CABIN COMFORT  
AND LUXURY FITTINGS, ETC.

**IT WAS MAINLY THE** young who took to the skies at the dawn of the aviation age. As middle age set in, neither was the mind as nimble as before nor were the reflexes as sharp, making it hard to cope with the constant risks and complexities of flying. Pilots learned to fly early, flew as much as possible in their youth and often died young. But Hilda Hewlett, a pioneering British pilot, was a notable exception. And she is still an inspiration for the seniors.

Born in Vauxhall, London, on February 17, 1864, Hilda Beatrice Hewlett (née Herbert) was no young daredevil. When she saw her first aircraft, she was 45 years old, married, with two children. She was also an expert wood, metal and fabric worker, a nurse and a woman who drove automobiles (which immediately called her character into question).

It was 1909 and the seaside town of Blackpool was hosting England's first ever air show. Hilda was among the awestruck spectators. This is what she later wrote about the first take-off she witnessed: "A great white thing was slowly pushed out of a shed, so big and strange. Paulhan, the French pilot of the aircraft, climbed up somehow, men twisted something round and round behind, when suddenly there was a roar which got louder and louder. The white thing moved – slowly – then faster and faster, till as it passed in front of me I saw one foot of space between it and the dirty muddy grass. That one foot of space which grew more and more made everything within me stop still. I wanted to cry, or laugh, but I could not move or think, I could only look with all my other faculties dead and useless. Something inside me felt it must burst. I had seen a reality as big as a storm at sea or Vesuvius throwing up fire and rocks – it made more impression than either of these. There seemed to be no limit to its future. I was rooted to the spot in thick mud and wonder and did not want to move. I wanted to feel that power under my own hand and understand about why and how. The whole trend of life seemed altered, somehow, lots of important things were forgotten, a new future of vague wonder and power was opened."

She just had to learn to fly. Paris was then the aviation hub of Europe so that's where she soon headed taking the name Grace Bird to conceal her identity.

Her fluency in French helped. But none of the many flying schools was willing to accept a woman student. Her only chance was to buy a French aircraft, which automatically entitled her as the owner to lessons at the manufacturer's school. So that is what she did, purchasing a primitive Farman III aeroplane manufactured by Farman Brothers. In France she also met Gustave Blondeau, a French engineer who had worked on the manufacture of Farman planes and the two became fast friends and colleagues. Together they learned to fly and repair planes.



**HILDA HEWLETT  
(1864-1943)**

Hilda Hewlett's family members were always proud of her adventurous spirit, determination, energy and ability and affectionately called her 'Old Bird'


In July 2010, Hilda persuaded Blondeau to return with her to England and set up a school called the Hewlett-Blondeau Flying School, at a motor-racing track in Brooklands, Surrey. Their lone machine was the one she had purchased in France named 'Blue Bird'. The school operated for only a year-and-a-half during which 13 pupils graduated. What's more, it had no accidents – a remarkable achievement for those perilous times. On August 29, 1911, Hilda Hewlett earned

her pilot's licence (Certificate No. 122 from the Royal Aero Club). She was the first woman in the UK to gain a flying licence and she did it at the age of 47.

Two students of her school bear mention. One was Thomas Sopwith who learned flying from Hilda and later designed and built a series of famous aircraft including the Hawker Hurricane that proved itself in the Battle of Britain. The other was her own son, Francis, who was one of very few boys who could add "Flying" to the list of "Things My Mother Taught Me". Francis Hewlett later distinguished himself in military flying both in England and New Zealand. He was awarded the Distinguished Service Order and retired in the rank of Air Commodore.

Once the school wound up, Hilda and Blondeau turned to aircraft manufacturing, with considerable success. Hilda ran their company, Hewlett and Blondeau, which soon built up a good reputation. Hilda's husband Maurice Hewlett had little sympathy for her passion for flying saying, "Women will never be as successful in aviation as men. They have not the right kind of nerve." However, he never opposed her aviation career and even invested in her company.

The company manufactured several types of French aircraft under licence including the Farman, Caudron and Hanriot. They went on to build famous British planes like the Avro 504K and the Armstrong Whitworth F.K.3, of which they produced no less than 350. In all Hewlett and Blondeau built over 820 aircraft of 10 different types. Hilda was described as an "indefatigable worker, good organiser and shrewd business woman". However, when World War I ended in 1918, their order book dried up practically overnight and the company went into bankruptcy.

At the age of 62, Hilda Hewlett sold the firm and migrated to New Zealand along with her children. At age 75, she became first President of the Tauranga Aero and Gliding Club and even created the Tauranga airport that is functional to this day. Her family members were always proud of her adventurous spirit, determination, energy and ability and affectionately called her "Old Bird". She died in Tauranga on August 21, 1943, and was buried at sea according to her expressed wish. 

— Joseph Noronha

## QUICKROUNDUP

### AIRBUS HELICOPTERS

Airbus Helicopters Inc has delivered the first H125 ASAR helicopter produced in its new US final assembly line to the Ohio State Highway Patrol. The new aircraft is the first fully assembled on the final assembly line at the company's helicopter production plant in Columbus, Mississippi.

### BAE SYSTEMS

The US Navy and industry partner BAE recently shipped 110 Advanced Precision Kill Weapons System (APKWS) units to Jordan for integration on its CASA CN-235 light gunship aircraft. Jordan is the first international partner to receive APKWS, a laser-guided rocket that can destroy targets while limiting collateral damage in close combat.

### BANGLADESH

Bangladesh has taken delivery of five Mi-171 helicopters from Rostec subsidiary Russian Helicopters. Ordered by the Department of Defense in 2013, the choppers will take part in a variety of missions including border protection, cargo delivery and UN humanitarian missions.

Bangladesh Prime Minister Sheikh Hasina has handed over Yakovlev Yak-130 subsonic two-seat advanced jet trainer and light attack aircraft or lead-in fighter trainer (Irkut Corporation) and AW139 15-seat medium-sized twin-engine search and rescue helicopter (Italy's AgustaWestland) to the Bangladesh Air Force on December 6. Bangladesh had signed a deal with Rosoboronexport to buy 24 Yak-130 trainers and with Italy to buy two AW139 helicopters.

### BOEING

Freshly painted 737 MAX 8, named the Spirit of Renton, was shown to the employees in a special teal version of the Boeing livery on December 8 for the first time. After celebrations are complete, the airplane will undergo pre-flight preparation in the factory before departing for Renton Field to continue flight test readiness. The airplane is on track for first flight in early 2016.

The final Boeing C-17 Globemaster III military airlifter at the company's plant in Long Beach, California, departed on November 29, marking the official end of aircraft production in Long Beach. Boeing will however continue the Globemaster III legacy, providing support, maintenance and upgrades to the worldwide C-17 fleet.

### CHINA

China's Yaogan-29 remote sensing satellite was launched on November 26 by a Long March-4C rocket. The satellite will be used for experiments, land surveys, crop yield estimates and disaster relief. China launched the first Yaogan series satellite, Yaogan-1, in 2006.

People's Liberation Army (PLA) Air Force's aircraft including the H-6K bombers flew over the Miyako Strait and performed a long-distance drill far into the western Pacific Ocean, reaching more than 1,000 km beyond the First Island Chain, according to Shen Jinke, a spokesperson for the PLA Air Force.

## MILITARY ASIA-PACIFIC

### ISRAELI COMMANDER OF AIR AND SPACE FORCES MEETS CAS



Major General Amir Eshel, Commander of Israeli Air and Space Forces, called on the Chief of the Air Staff Air Chief Marshal Arup Raha at Air Headquarters, on November 30, 2015. In the recent years, India-Israel defence cooperation has grown into multifaceted defence level exchanges in diverse areas of defence cooperation. On its part, Israel views India as a strategic ally and has displayed willingness to cooperate on all fronts. The Indo-Israel defence relations comprise mainly of purchase of military equipment, MoD level dialogue, technology collaboration and service-to-service defence cooperation through service level staff talks. India-Israel defence cooperation has improved rapidly in the last few years with Israel providing state-of-the-art military hardware to India at reasonable cost. Israelis have been at the cutting-edge of R&D in advanced technologies in a wide range of fields such as telecom, software, biotechnology, medical, electronics, agriculture and defence. Israel undertakes joint industrial R&D projects with several advanced countries including India.

### AIR CHIEF MARSHAL ARUP RAHA INAUGURATES SEMINAR AND EXHIBITION AT HAL



The Chairman Chiefs of Staff Committee and the Chief of the Air Staff (CAS), Air Chief Marshal Arup Raha addressed senior officers of the Hindustan Aero-

nautics Limited (HAL) at the inauguration of the seminar and exhibition on 'Challenges in Make in India Initiatives' at HAL, Nasik Division. While addressing the gathering, the CAS said that indigenisation holds the key to success in attaining self-reliance in defence production and gaining strategic independence. The CAS expressed his appreciation on the successful conduct of the event being organised by HAL. He said that Quality Control and Certification of indigenous products should be the focus area to produce world-class high quality equipment. The MiG complex has undertaken licensed production and overhaul of various Russian origin aircraft.

The CAS further said that the status of the IAF aircraft inventory was mainly dependent upon HAL and he hoped that the organisation would ensure timely inductions, quality product support and speedy overhaul of aircraft. He further complimented HAL for its significant contribution towards 'Make in India' initiative and boosting self-reliance through indigenisation. He emphasised that setting up of state-of-the-art test facilities for future programmes should be a key focus area so as to transform HAL into a major manufacturing as well as R&D centre of excellence in the field of aviation. He exhorted HAL to strive to attain technological leadership and excellence to meet global standards and become a world-class enterprise in aircraft production.

### PURCHASING OF RAFALE JETS BY INDIA



During his visit to France in April 2015, Prime Minister Narendra Modi announced on April 10 in a joint conference with French President François Hollande that India would buy 36 of the Rafale fighter jets in flyaway condition citing critical operational requirements of the IAF. The two leaders further agreed to conclude an Inter-Governmental Agreement for supply of the aircraft on terms that would be better than conveyed by Dassault Aviation earlier, the delivery would be in time frame that would be compatible with the operational require-



ment of IAF and that the aircraft and associated systems and weapons would be delivered as per the same configuration as had been tested and approved by the IAF and with a longer maintenance responsibility by France. A negotiating team was constituted to negotiate the terms and conditions of the procurement of 36 Rafale jets and recommend a draft agreement. The meetings of the Indian negotiating team with the French are currently underway.

## PILOT-TO-COCKPIT RATIO IN THE IAF



Existing pilot-to-cockpit ratio for the current number of squadrons in the IAF is in consonance with the authorised ratio. The present utilisation rate of the trainer aircraft is as follows:

- Pilatus Mk-II 19.73 hrs
- Kiran Mk-I/IA 18.36 hrs
- Hawk-132 13.42 hrs

Measures like proactive forecasting of requirement of spares, reducing down time of aircraft and optimal utilisation of available resources have been taken to increase the utilisation rate of aircraft. The Hindustan Aeronautics Limited (HAL) is currently manufacturing Hawk MK-132 advanced jet trainer aircraft under transfer of technology from British Aerospace Systems (BAE), UK. Further, HAL has also signed an MoU with BAE Systems UK in May 2015 for Hawk MK-132 upgrade and development of combat Hawk for Indian and export markets.

## BOEING DELIVERS FINAL PEACE EAGLE AEW&C AIRCRAFT TO TURKEY



Boeing has delivered the fourth and final Peace Eagle airborne early warning &

control (AEW&C) aircraft to the Turkish Air Force at Konya Air Base, completing the Turkish AEW&C fleet and enhancing Turkey's airspace surveillance and battle management capabilities.

This final aircraft includes upgraded software for the platform and the final element of the ground support segment, the software support centre (SSC). Previously delivered Peace Eagles will receive the upgraded software soon. Boeing worked with the Turkish industry partners Turkish Aerospace Industries, Turkish Airlines, HAVELSAN and ASELSAN to complete the delivery of the final aircraft as well as establish technology capabilities like the SSC, updated mission simulator software and mission support centre software. Based on Boeing's 737-700 commercial airplane, the 737 AEW&C aircraft's advanced radar and 10 state-of-the-art mission crew consoles can track airborne and maritime targets simultaneously.

## INDO-RUSSIAN HELICOPTER DEAL

Prime Minister Narendra Modi is set to sign a deal to assemble 200 Ka-226 helicopters in India on his visit to Russia later this month. Negotiations have been ongoing for some time, but it is hoped that the visit will see contracts signed as part of a wider \$1 billion defence deal between Russia and India. The initial helicopters will be supplied by Russian made kits, but it is hoped that this will be indigenised once a suitable Indian manufacturer has been selected. Talks have also taken place with France, who produces the engines for the Ka-226 and it is believed that a technology transfer has been agreed with them. Last month, France and India finalised negotiations on having Rafale fighters assembled in India as part of Prime Minister Modi's 'Make In India' initiative.

## CIVIL

## ASIA-PACIFIC

### AIRASIA INDIA

AirAsia India, the joint venture between Malaysian low-cost airline AirAsia Berhad, the Tata Group and Arun Bhatia, is in the docks after Bhatia accused the promoter airline of controlling the operations from Malaysia. Most key decisions including those involving daily operations are allegedly being taken in the Sepang headquarters of the parent company. However, AirAsia India has denied the charges. The Indian government may consider a probe into the matter as the

## QUICKROUNDUP

### DYNCORP INTERNATIONAL

DynCorp International, Texas, has been awarded a \$6,10,54,351 firm-fixed-price foreign military sales (Saudi Arabia) contract with options for maintenance support for the Saudi Land Forces Aviation Command aviation programme. Work is expected to be completed by January 31, 2021.

### EMBRAER

Ghana is set to increase its fleet of Embraer Super Tucano aircraft in 2016. The order of four more of the aircraft will see a previous contract increase to nine. The acquisition will also include logistical support and training for pilots as well as maintenance training for technical personnel.

### FORECAST INTERNATIONAL

As per a report by Forecast International issued on December 9, 2015, Boeing and Airbus delivered 71 and 61 commercial jets in November 2015 respectively, compared to 58 and 49 in October. In 2015 to date, Boeing has delivered 709 aircraft, ahead of Airbus' 556. Boeing strengthened its lead in the 2015 delivery race to 153 units, compared to 143 units in October and 134 units in September.

Forecast International has said that production of the 1,300 satellite platform is expected to remain strong during the forecast period, especially in 2016. The satellite is a success in the commercial communications market. Its large size and power output allow it to be used for a number of applications, including video broadcasting, data networks and broadband Internet.

### GENERAL ATOMICS

France's Directorate General of Armaments on December 7, 2015, has ordered a third General Atomics Reaper medium-altitude, long-endurance drone system through foreign military sales (FMS) programme. France's military programme provides that by 2019 the Air Force is to have four complete systems, each comprising three unmanned aircraft.

### LOCKHEED MARTIN

Lockheed Martin Aeronautics Co, Texas, has been awarded a \$54,83,56,00 modification to a previously awarded cost-plus-fixed-fee contract for recurring logistics services support. Work is expected to be completed in December 2015.

Lockheed Martin has been awarded a \$914 million fixed-price incentive and cost-plus contract to upgrade F-16 aircraft for the Government of Singapore under the 100 per cent FMS. Work is expected to be completed by June 30, 2023.

## QUICKROUNDUP

Lockheed Martin has been awarded a \$78.9-million modification to previously awarded contract for F-22 air vehicle sustainment. Work is expected to be completed by December 31, 2016.

A Lockheed Martin PAC-3 Missile Segment Enhancement (PAC-3 MSE) missile has successfully engaged and intercepted a tactical ballistic missile target at White Sands Missile Range, New Mexico, as part of a US Army-led missile defence test.

The Australian Government has contracted Lockheed Martin Australia to provide and support the new Australian Defence Force Pilot Training System. The acquisition and services contracts worth \$1.2 billion will see Lockheed Martin Australia deliver 49 Pilatus PC-21 aircraft, seven Flight Simulators, a modern learning environment for students, updated courseware, along with support for an initial seven-year term.

Lockheed Martin has been awarded a \$21.5 million modification to a previously awarded advance acquisition contract to purchase, manufacture and install various components to update the configuration of four conventional take-off and landing variant F-35 Lightning II aircraft for the Government of Japan under the FMS programme. Work is expected to be completed in December 2016.

### NORTHROP GRUMMAN

Northrop Grumman Corporation has delivered the centre fuselage for Japan's first F-35 Joint Strike Fighter, an F-35A conventional take-off and landing aircraft designated AX-1. The centre fuselage is a core structure of the F-35 aircraft.

NATO's first alliance ground surveillance (AGS) aircraft, built by Northrop Grumman, successfully completed its first flight on December 19, 2015. The AGS Core will be an integrated system consisting of an air segment and a ground segment and related support systems. The air segment consists of five Global Hawk Block 40 high-altitude, long-endurance UAVs.

### ORBITAL ATK

Orbital ATK has announced that it has been granted a patent by the US Patent and Trademark Office for the Helicopter Active Protection System (HAPS), which protects helicopters against airborne threats. This represents the first patent awarded to Orbital ATK for its development of methods and systems of active protection from aerial threats by dispensing a kill vehicle from either aerial or ground platforms.

### RUSSIA

Spokesman for the Russian Aerospace Forces Colonel Igor Klimov stated on November 30 that Russia's Sukhoi Su-34 fighter bombers (NATO reporting name: Fullback) have for the first time been armed with short- and medium-range air-to-air missiles on combat mission in Syria for self-protection. This is in addition to the bombs it carries for their missions. The missiles are equipped with target seeking devices and are capable of hitting air targets up to a range of 60 km.

policy on Foreign Direct Investment (FDI) in aviation clearly states that if a foreign airline partners or invests in an Indian carrier, "effective control" must remain in Indian hands.

Bhatia's remarks may be fallout of a share purchase deal gone sour between him and Tata Sons. Bhatia owns 10 per cent in the airline and Tata Sons own 41 per cent. The remaining 49 per cent is held by AirAsia Malaysia. The total equity in the airline is \$30 million. It began operations last June and holds two per cent market share in the domestic sector. Although represented on the AirAsia India board, the Tatas are said to be minimally involved in the day-to-day operations. The report and the subsequent coverage in the media has sent AirAsia shares into a tailspin.

### LARGE ORDER FOR AIRCRAFT BY SPICEJET

SpiceJet is in talks with Boeing and Airbus to buy more than 150 aircraft. The final decision on the original equipment manufacturer is expected to be taken by the end of March 2016. Such an investment would cap a remarkable turnaround for India's second largest budget airline by market share, which came close to collapse late last year, after running out of cash. SpiceJet co-founder Ajay Singh subsequently bought back into the airline, acquiring a controlling stake. SpiceJet has reported profits in the past three quarters, having made losses in the five preceding quarters. The plan now is to more than quadruple the carrier's fleet from 41 aircraft at present. The airline is also in talks with Toronto-listed Bombardier, France's ATR and Brazil's Embraer to buy a further 50 planes for the regional aviation segment of business servicing India's smaller cities through a fleet of 14 Bombardier planes. "We are in the process of placing a large aircraft order in excess of 150 planes and we hope to do that in this financial year," said Ajay Singh, Chairman and Managing Director, SpiceJet.

### NEW INTERNATIONAL AIRPORT AT BEIJING

The new international airport at Beijing that is being built at a cost of \$13.1 billion, will be able to handle 100 million passengers annually by 2019. Located in Southern Beijing's Daxing district, the airport is expected to meet the capital's rising demand for air travel and help balance development in Beijing's Southern and Northern areas. Currently, Beijing has two airports that operate civil aviation flights, Beijing Capital International Airport and Beijing Nanyuan

## SHOW CALENDAR

18–20 January, 2016  
**INTERNATIONAL MILITARY HELICOPTER 2016**

Park Plaza Victoria, London, United Kingdom  
[www.militaryhelicopterevent.com](http://www.militaryhelicopterevent.com)

20–23 January, 2016  
**US SPORT AVIATION EXPO**  
Sebring Regional Airport, Florida City, USA  
[www.sportaviationexpo.com](http://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](http://www.bahraininternationalairshow.com)

3–4 February, 2016  
**MRO MIDDLE EAST**  
Dubai World Trade Centre, Dubai, UAE  
[www.mromiddleeast.aviationweek.com](http://www.mromiddleeast.aviationweek.com)

16–21 February, 2016  
**SINGAPORE AIRSHOW 2016**  
Changi Exhibition Centre, Singapore  
[www.singaporeairshow.com](http://www.singaporeairshow.com)

23–25 February, 2016  
**AIRBORNE ISR & C2 BATTLE MANAGEMENT**  
Hotel Russell, London, UK  
[www.airborneisrandbmc2.com](http://www.airborneisrandbmc2.com)

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

Airport. Beijing Capital International Airport, located in North-Eastern Beijing, served 83.7 million passengers in 2013 and was listed as the second-busiest airport in the world last year by passengers, behind Hartsfield-Jackson Atlanta International Airport in the United States, according to Airports Council International. The construction of the new airport commenced in December 2014 and is expected to be completed in about five years. It is planned that the new airport will have seven runways. Construction of the first runway began late last year and construction on the

## APPOINTMENTS

### ATLAS ELEKTRONIK GMBH

With effect from January 1, 2016, Dr Rolf Wirtz has been appointed as Chief Executive Officer.

### BAE SYSTEMS

BAE Systems has announced the appointment of Alistair Castle as Vice President and General Manager of its India operations with effect from January 1, 2016.

The company has announced the appointment of Michael G. Vickers to its Board of Directors for a three-year term, beginning December 1, 2015.

### EUROFIGHTER JAGDFLUGZEUG GMBH

The Shareholders of the Eurofighter consortium have appointed Volker Paltzo as the new Chief Executive

Officer of Eurofighter Jagdflugzeug GmbH as of January 1, 2016.

### RUAG AVIATION

RUAG has appointed John Teager as Managing Director for RUAG Australia effective January 1, 2016.

### HINDUSTAN AERONAUTICS LIMITED, BENGALURU

D.K. Venkatesh has taken over as Director (Engg and R&D) of the Hindustan Aeronautics Limited, Bengaluru effective December 3, 2015.

### INDIAN AIR FORCE

Air Marshal Harjit Singh Arora took over as Director General (Inspection and Safety) at Air Headquarters on December 1, 2015.

airport's terminal building started in September 2015.

### DELHI AIRPORT TO EXPAND CAPACITY

Passenger traffic at Delhi airport has grown 70 per cent in the last seven years. Delhi International Airport Ltd (DIAL) is working on a plan to decongest domestic terminals 1D and 1C used by low-cost airlines and expand facilities to meet the projected traffic growth to 100 million by 2033. Delhi Airport handled 24 million passengers in 2007-08. During the period, domestic traffic grew 63 per cent to 27.5 million and international traffic by 87.5 per cent to 13.5 million. DIAL estimates traffic will cross 100 million by 2033 and 70 per cent of this will be domestic. Delhi Airport, the busiest in the country, handled 41 million passengers in 2014-15. About 26 million were handled at the T3 terminal and the rest at T1. While T3 is designed for a capacity of 34 million annually, T1 can handle 16 million. The latter, used by IndiGo, GoAir and SpiceJet, is reaching saturation point. A review of the 2006 plan has been done and a new one prepared. T1's handling capacity is to be raised to 30 million and T3's to 45 million a year. It will also see construction of a new terminal, T4, to handle 34 million domestic passengers and a fourth runway. DIAL has not disclosed how it intends to use terminal 1A and its old international terminal, neither being in regular use.

## INDUSTRY ASIA-PACIFIC

### SOUTH KOREA, LOCKHEED MARTIN HAVE 'NECESSARY APPROVALS' FOR KF-X PROJECT

The State Department said that South Korea and its fighter jet development project partner firm, Lockheed Martin (LM), have the "necessary approvals" to proceed with the project, confirming its approval of LM's plan to transfer key technologies to Seoul. The department also pledged to support the KF-X project "to the maximum extent possible." As the programme develops, the US expects that export licences will be periodically amended accordingly. Earlier in the day, Korean officials said that the US Government gave Lockheed Martin export licences for the planned transfer to Seoul of 21 technologies necessary for the fighter project and that the defence firm informed Seoul of the approval. The US approval of the technology transfer lays to rest growing speculation that Washington might be reluctant to approve the technology transfer. Under the \$15.7-billion programme, Korea plans to produce 120 indigenous combat jets by 2025. In an offset deal linked to Korea's purchase of 40 units of LM's F-35 Lightning II fighters last year, the US company had offered to provide 25 technologies for the local programme. ●

## QUICKROUNDUP

### SAAB

Swedish defence major Saab has offered to manufacture its Gripen fighter aircraft in India with technology transfer to India, in a renewed bid for India's multibillion-dollar worth IAF modernisation plan. Saab is not only offering to set up a base here but also help in the development of aerospace capability for the next 100 years and partner in developing the next version of indigenous LCA Tejas and the advanced medium combat aircraft.

### SIKORSKY

Sikorsky Aircraft Corp, Connecticut, has been awarded a \$10,65,10,258 modification to contract W58RGZ-13-D-0001 for technical, engineering, logistics services and supplies and 100 per cent parts support for the H-60 weapons system. Estimated date of completion is November 30, 2016.

Sikorsky Aircraft has been awarded a \$1,42,23,772 indefinite-delivery/indefinite-quantity contract for the procurement of special progressive aircraft rework sustainment support services, including security, project engineering, integrated logistics support, VIP helicopter training, and programme support for the Presidential Helicopters Programme. Work is expected to be completed in November 2016.

### THALES

Thales Alenia Space has announced that it has signed a contract with O3b Networks to deliver eight more satellites for their Medium Earth Orbit constellation. These satellites are in addition to 12 already delivered by Thales Alenia Space and operational in orbit. The additional satellites will expand the present constellation which has been fully operational since September 2014.

### TURKISH AEROSPACE INDUSTRIES

Turkish Aerospace Industries and the Light Helicopter Turbine Engine Company, a 50-50 partnership between Honeywell International Inc and Rolls-Royce, have signed an agreement to supply CTS800 turboshaft engines for the Turkish light utility helicopter programme.

### VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY

As per reports in the media, the Vietnam Academy of Science and Technology has successfully developed a long-range unmanned aerial vehicle (UAV) with equipment for scientific research and electronic reconnaissance to serve national security. The UAV is designed with a wingspan of 22 m and load capacity of 1,350 kilograms. It can fly for 35 hours and has a range of over 4,000 km.



# AVOID MULTIPLICITY OF TYPES

**AFTER THE GLOBAL TENDER** for 197 light utility helicopters (LUH) in the three-tonne class to replace the ageing fleet of Cheetah and Chetak helicopters being operated by the Indian Army and the Indian Air Force (IAF) was cancelled for the second time, there has been a somewhat unprecedented spurt in activity in the Indian aerospace industry related to the manufacture of helicopters in the country to meet with the requirement of the Indian armed forces. Media reports in the second week of December this year indicated that during the forthcoming visit of Prime Minister Narendra Modi to Russia on December 24, 2015, the issue of the production of Kamov Ka-226T helicopters by the Hindustan Aeronautics Limited (HAL) in Goa will be a subject of discussion between him and the Russian President Vladimir Putin. According to Dmitry Rogozin, Deputy Prime Minister of Russia, negotiations between New Delhi and Moscow for a joint venture (JV) to execute this large helicopter project is in the final stages and the contract is likely to be inked during the forthcoming visit of the Indian Prime Minister.

Strangely enough, a report in the media in August this year had said that the Russian Government had selected Reliance Defence and Aerospace (RDA), a company owned by Anil Ambani, for a JV to manufacture around 200 Kamov 226T helicopters in India for the Indian Army and the IAF. The order has the potential to go up to 400 machines. The report also stated that under the agreement signed between Reliance Helicopters, Russian Helicopters and Rosoboronexport, Reliance Helicopters will be the lead integrator for licensed production along with transfer of technology. The Reliance Group will hold a majority 51 per cent stake in the JV while the Russian Government will hold 49 per cent. However, if both these reports are true, it would be somewhat incongruous that the Russian original equipment manufacturer (OEM) should enter into agreements to form separate joint ventures in India for the same product.

Earlier this year, there was yet another report in the media that Airbus Helicopters was joining hands with Mahindra Defence, a subsidiary of the Mahindra Group, to produce helicopters in India to meet the requirements of the Indian armed forces for light helicopters in the three-tonne class. Although details of the platform were not stated, in all likelihood it would be the Fennec AS550 C3 which the IAF had selected

in 2007 as replacement for the Cheetah and Chetak helicopters. The tender was subsequently cancelled. As nearly a decade has elapsed since the Fennec AS550 C3 was evaluated, the OEM would in all likelihood now offer the latest model of this machine.

Apart from the three JVs for the LUH for the armed forces mentioned above, on its own, HAL has also been embarked on a project to develop a single-engine light helicopter in the three-tonne class for the same market. A mock-up has also been displayed at the Aero India International Airshow at Bengaluru. HAL has apparently been tasked to provide 187 of these machines beyond the 197 platforms that are to be produced through the JVs in India. The maiden flight of the LUH was scheduled for 2015 with production commencing in 2018 and delivery by 2022. But there is slippage in the programme.

It is noteworthy that both the public and private sectors in the Indian aerospace industry, namely HAL and RDA, are getting involved simultaneously to manufacture the Kamov Ka-226 helicopters for the armed forces and are moving on parallel track. At this point in time it is not quite clear as to whether one or both the JVs will finally be tasked for the manufacture of the Ka-226 helicopters. Analysts are of the view that as RDA does not have any experience in the manufacture of rotary-wing platforms which is an infinitely complex process, it may not be prudent to expect them to handle this responsibility with the required degree of professionalism and competence. This would also have serious implications for the operators of the platform in the long run especially from the point of view of lifetime maintenance support. With HAL fielding its own indigenous product and the Airbus-Mahindra JV coming up with the Fennec, the Indian armed forces may eventually end up with four different types of LUH on their inventory.

While the whole exercise appears to be driven by the spirit of the 'Make in India' theme, unless there is meticulous planning and proper judgement exercised by the highest levels of the government and the armed forces, the IAF and the Indian Army may find themselves confronted with a chaotic situation having to cope with the complexities of the management and operation of multiple types of the urgently needed replacement for the Cheetah and Chetak fleets. **SP**

—By Air Marshal  
B.K. Pandey (Retd)



Both the public and the private sectors in the Indian aerospace industry appear to be getting involved simultaneously to manufacture the Kamov Ka-226 helicopters for the Indian armed forces



Ministry of Civil Aviation  
Government of India

# 5<sup>th</sup> International Conference on Civil Aviation **INDIA AVIATION 2016**



**March 17, 2016**  
Begumpet Airport, Hyderabad, India

India's Civil Aviation Sector:  
**Potential Global Manufacturing & MRO Hub**



## Key Highlights

- India's largest & globally acknowledged event on civil aviation
- Unmatched platform for policy debate and networking
- Ministerial & Business Delegations from USA and other countries
- Parallel events like CEOs' Forum, B2B Meetings and Networking Reception

## Focus Areas

- Reformulating aviation strategy for promoting regional & remote-area connectivity to unlock their potential for growth by supporting inward investment
- Addressing challenges facing the sector - high taxation regime, exorbitant airport charges, security & surveillance related issues, skill deficit, etc
- Highlighting the need for redesigning regulatory landscape for the seamless growth of the sector
- Showcasing latest technologies, innovative ideas, best practices & partnership strategies followed globally in enhancing regional air connectivity

## Sponsorship Opportunities at Conference

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