May 2022

100 KNOTS

India's Premier Crew Magazine

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Why Airlines need to go Green

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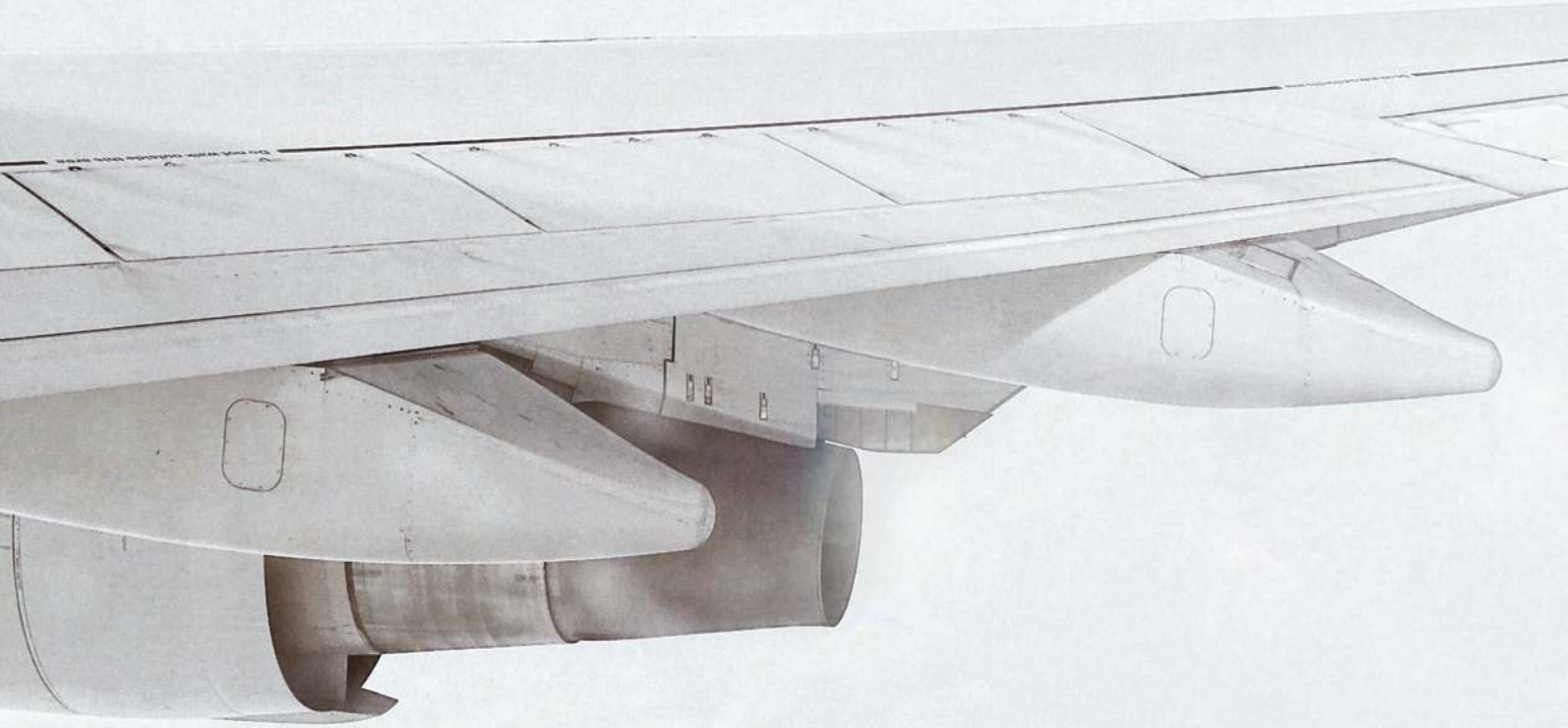


jens-kreuter

EDITORIAL DESK

Preet Palash
Editor

Dear Aviation colleagues

Welcome to the May edition of the 100 KNOTS Magazine.
April has been an exciting month for Aviation in India. As we approach the end of pandemic, most countries have started opening their borders for quarantine free travel. The passenger load factors are on an upward trend and the airports have started to get congested again. In a first, the US administration has dropped the mask requirements on domestic travel, a move India will soon follow. Many airlines have started restoring salaries to pre-covid levels, thanks to increased revenues.

On the Government level, the civil aviation ministry led by Jyotiraditya Scindia has covered significant ground in areas of infrastructure development. Airport facilities are expected to see a major boost with INR 98,000 crores promised to it alone. Efforts are also underway to reduce VAT on ATF and bring it under GST, a step that will significantly bring down operating cost for airlines. HAL has delivered the first made-in-India Dornier 228 to Alliance Air, tasked with facilitating connectivity within the north-eastern states.
April has also seen new top management appointments across the industry. I would like to extend my warm wishes to Ms. Puja Singh Mandol, appointed as DG of Aircraft Accident Investigation Bureau (AAIB), Vikram Singh Mehta and Air Chief Marshal B.S. Dhanoa appointed as Non-Executive Directors and RK Singh as principal advisor at Indigo, Nipun Aggarwal as CCO and Suresh Dutt Tripathi as CHRO of Air India.

In this issue, we have brought together Industry experts from all domains who have written on critical subjects, both technical and non-technical that affects our daily operations.

I close this message by inviting everyone to submit their exciting ideas to 100 Knots. All papers are received with a high degree of enthusiasm and it will find a home in the future issues. We are committed to publishing all discoveries, methods, resources, and reviews that significantly covers Indian aviation sector at large.

Our sincere thanks to all the contributors for their support and interest. We hope to hear from you soon!

THIS ISSUE

Corporate Aviation

Statistics (Airplanes)

Total Fleet Size 138
Total Operators 69

Most Popular Business Jet

Dassault Falcon2000

Total in India - 15
Primary Operator - Club One Air
Origin - France
Passengers - 19
Range - 6000 Km
Speed - Mach 0.80
Price - US$ 25m

Cessna Citation 560

Total in India - 8
Primary Operator - Air Charter Services
Origin - USA
Passengers - 9
Range -3000 Km
Speed - Mach 0.75
Price - US$ 13m

Biggest Business Jet

Airbus Corporate Jet ACJ319 “Elegance”

Total in India - 1
Primary Operator - Reliance Industries
Origin - France
Passengers - 19
Range - 9100 Km
Speed - Mach 0.80
Price - US$ 87m

Embraer Lineage 1000

Total in India - 1
Primary Operator - Mytri Aviation
Origin - Brazil
Passengers - 19
Range - 8500 Km
Speed - Mach 0.82
Price - US$ 50m

Most Popular Turboprop

Beechcraft Super King Air B200

Total in India - 14
Primary Operator - Jaypee Group, VSR Aviation
Origin USA
Passengers - 10
Range - 3000 Km
Speed - 310 Knots
Price - US$ 6.6m

Beechcraft Super King Air C90

Total in India - 12
Primary Operator - Pinnacle Air, Redbird Airways
Origin - USA
Passengers - 7
Range - 2400 Km
Speed - 220 Knots
Price - US$ 2.7m

Biggest Operators (Airplanes)

VSR Aviation

Bombardier Learjet 45	4
Embraer ERJ135	1
Cessna Citation 525	1
Pilatus PC 12	1
Beechcraft Super King Air B200	2
Fleet Size	9

Pinnacle Air

Cessna Citation 525	2
Beechcraft Premier 1A	1
Embraer Phenom 100	1
Partenavia P 68	1
Cessna C208 Caravan	1
Beechcraft King Air C90	1
Fleet Size	8

Air Charter Services

Cessna Citation 560	3
Dassault Falcon 2000	1
Dassault Falcon 7X	1
Pilatus PC 12	2
Beechcraft Super King Air B200	1
Fleet Size	8

Club One Air

Dassault Falcon 2000	5
Cessna Citation 550	2
Cessna Citation 560	1
Fleet Size	8

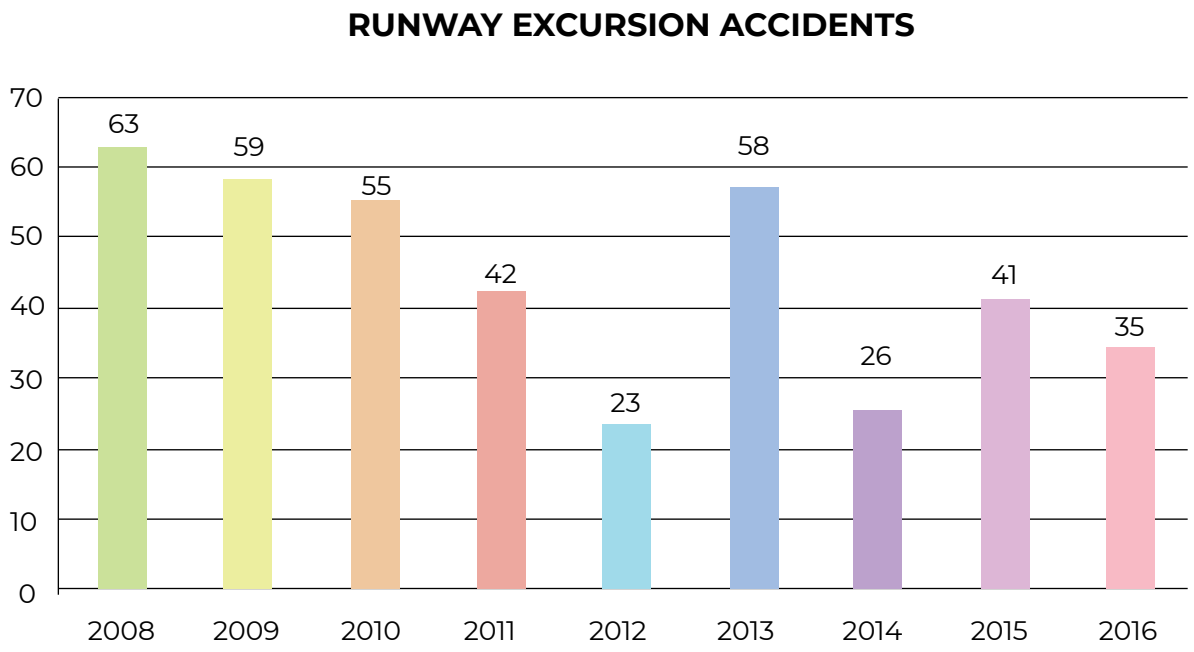
Global Reporting Format

Prashant Prabhakar
SME - 100 knots

Niklas Jonasson

BACKGROUND

ICAO has placed runway excursions at the top of the list when it comes to incidents related to runway safety. The Flight Safety Foundation has indicated that ineffective braking action coupled with shortfalls in the accuracy and timeliness of runway surface conditions assessment and reporting is the third most common landing excursion risk factor, a trend which is also confirmed by aircraft manufacturers. Additionally, different methodologies used globally for the reporting of runway conditions, and differences in training, has been a longstanding cause of confusion, often leading to misinterpretation by flight crews and multiple accidents over the years.



GRF

In 2017, ICAO's Global Runway Safety Action Plan called for the development and deployment of the ICAO format for assessing and reporting runway surface conditions as an effective mitigation. This new methodology, the Global Reporting Format (GRF) has its origins in the FAA's Take-off and Landing Performance Assessment (TALPA) that was developed following the runway overrun accident of a Boeing 737 at Chicago Midway airport.

GRF is a globally standardized language reporting Format, developed specifically to address inconsistencies in the interpretation of data for runway surface conditions. This has been designed to make it easier for all users involved to decipher and interpret the figures and numbers. It communicates actual runway conditions to pilots in terms that directly relate to expected aircraft performance.

So what's new?

New Terms
Runway condition assessment matrix (RCAM), Runway condition code (RWYCC) and Runway condition report (RCR) have been introduced.

Contaminants
The runway inspector will now report conditions based on 18 types of contaminants or contaminant pairs as opposed to the former basic 7 types.

Runway surface conditions
Runway surface conditions have been broadly divided into 4 categories: DRY, WET, SLIPPERY WET and CONTAMINATED

Revised scale
GOOD, GOOD TO MEDIUM, MEDIUM, MEDIUM TO POOR and POOR is used by the flight crew to characterize perceived braking action and lateral control of the airplane during landing roll.

SNOWTAM
SNOWTAM is now required if perceived hazards due to (standing > 3 mm) water on the movement areas. This means we can see SNOWTAM messages even without snow. The validity of a SNOWTAM has also been changed to 8 hours.

Reporting each Runway third
Aerodrome operator will assess the runway condition for each third and create an RCR. This method will allow operators to disregard a lower reported condition towards the end of runway if demonstrated by performance.

Landings and Takeoff
The runway inspector is assigned with the task of reporting whether it is a landing/takeoff critical contaminant. The RCAM table was initially designed with respect to landing performance. To safely cover both landing and Takeoff, the inspector should choose the RCAM contaminant with the greatest impact on Takeoff performance and a RWYCC value with a correct effect on landing performance.

Niklas Jonasson

Runway condition assessment matrix (RCAM)

RCAM is a matrix allowing the assessment of the runway condition code, using associated procedures, from a set of observed runway surface condition and pilot report of braking action. It is not a standalone document and shall be used in compliance with the associated procedures of which there are two main parts:

1. Assessment criteria; and
2. Downgrade assessment criteria.

Assessment Criteria		Downgrade Assessment Criteria	
Runway condition code (RWYCC)	Runway surface description	Pilot report of runway braking action	Airplane deceleration or directional control observation
6	DRY	N/A	-
5	- Frost - WET (the runway surface is covered by any visible dampness or water up to and including 3 mm depth) Up to and including 3mm depth - Slush - Dry Snow - Wet Snow	GOOD	Braking deceleration is normal for the wheel braking effort applied and directional control is normal.
4	15'C and lower OAT - Compact Snow	GOOD TO MEDIUM	Braking deceleration or directional control is between good and medium.
3	- WET ("slippery wet" runway) - Dry Snow or Wet Snow (any depth) on top of Compacted Snow More than 3mm - Dry Snow - Wet Snow Higher than -15'C OAT - Compacted Snow	MEDIUM	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced
2	More than 3 mm depth of water or Slush: - Standing Water - Slush	MEDIUM TO POOR	Braking deceleration OR directional control is between medium and poor.
1	Ice	POOR	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.
0	- Wet Ice - Water on top of Compacted Snow - Dry Snow or Wet Snow on top of Ice	LESS THAN POOR	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.

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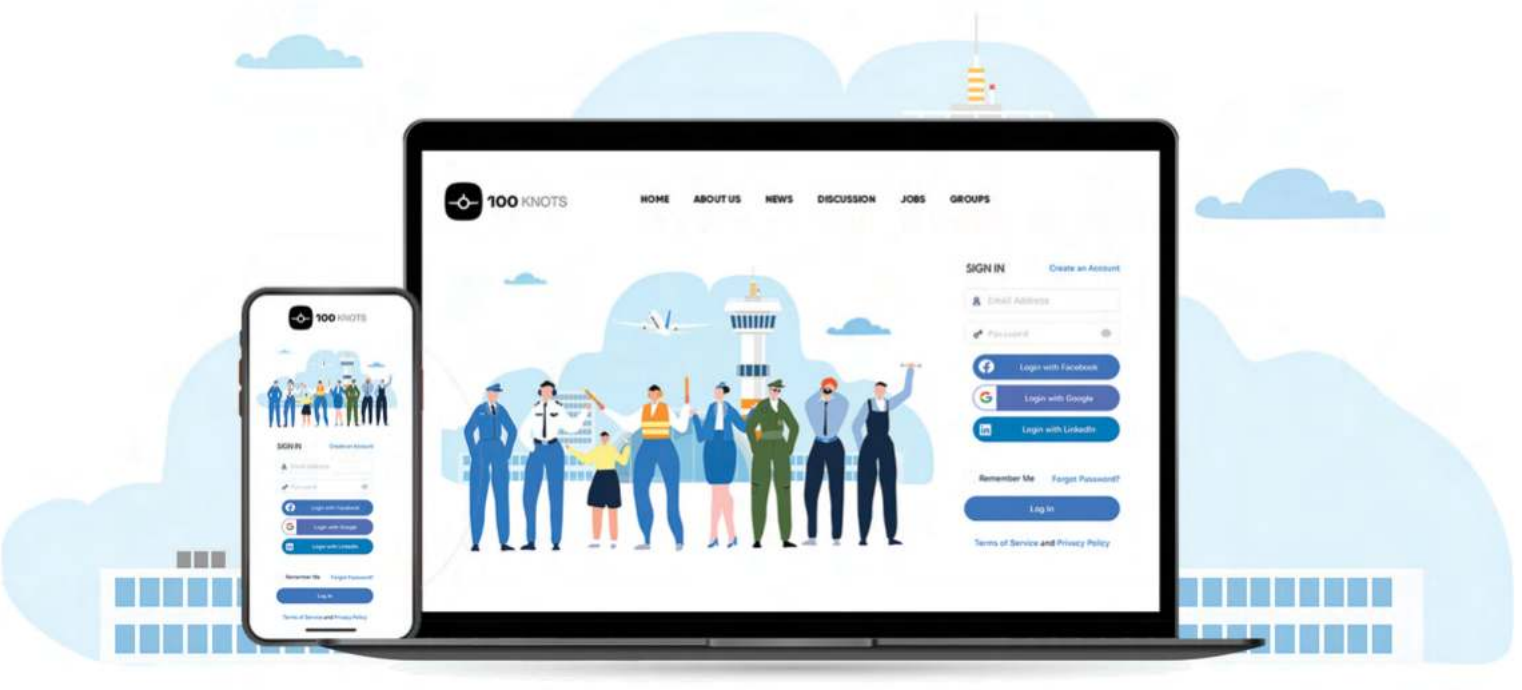


Why Airlines Need To Go Green

Anil Goyal
Captain Q400-SpiceJet

ATR

Air transport connects the world, bringing people and goods together. But the benefits of aviation also have an environmental downside. Emissions, noise, industrial processes, and waste must be managed by the industry, reduced, and where possible eliminated. Reducing climate change is a serious global challenge. Commercial aviation is responsible for about 2% of global carbon emissions. In 2009 the aviation industry put in place an ambitious and robust carbon emissions strategy, with targets and a four-pillar action plan. The aviation industry recognizes the need to address the global challenge of climate change and adopted a set of ambitious targets to mitigate CO2 emissions from air transport:

• An average improvement in fuel efficiency of 1.5% per year from 2009 to 2020 was achieved with improvements in technology.
• A cap on net aviation CO2 emissions from 2020 (carbon-neutral growth)
• A reduction in net aviation CO2 emissions of 50% by 2050, relative to 2005 levels

To be part of the solution and in order to achieve the above targets, a strong commitment is required from all stakeholders working together through the four pillars of the aviation industry strategy:
• Improved technology, including the deployment of sustainable low-carbon fuels
• More efficient aircraft operations
• Infrastructure improvements, including modernized air traffic management systems
• A single global market-based measure, to fill the remaining emissions gap

Global Measure for Aviation

In 2016, the 39th ICAO Assembly concluded with the adoption of a global offsetting scheme to address CO2 emissions from international aviation. The agreement at ICAO demonstrated that aviation is determined to live up to its commitments and play its part in meeting international goals for emissions reduction. The scheme established by ICAO is a global offsetting mechanism, called CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation). CORSIA aims to help address any annual increase in total CO2 emissions from international civil aviation above 2020 levels. CORSIA's obligations have already started. As of 1 January 2019, all carriers are required to report their CO2 emissions on an annual basis. The aviation industry is committed to technology, operational, and infrastructure advances to continue to reduce the sector's carbon emissions.
Airlines have voluntarily adopted numerous programs to reduce their environmental impacts including tree-planting programs, new electric-powered tugs to reduce fuel consumption by aircraft and ground vehicles while taxiing, aircraft operating procedures which reduce fuel consumption, and many more. According to the International Air Transport Association (IATA), the industry has achieved a 50% reduction in carbon emissions per passenger since 1990, and fuel efficiency has increased by 2.3% each year since 2009.
How carbon offsetting works – When projects that reduce CO_2 emissions are developed, every ton of emissions reduced results in the creation of one carbon offset or carbon credit. A carbon credit is a tradeable certificate that represents the avoidance or removal of one ton of carbon dioxide emissions. Buying carbon credits means investing in emission reduction projects that require carbon offsets financing in order to take place.

AIRBUS

Some carbon offsets projects are:

· **Landfill Gas Capture (LFG):** Landfill gas is a natural by-product of the decomposition of organic material in landfills. Instead of escaping into the air, LFG can be captured, converted, and used as a renewable energy resource. LFG energy projects generate revenue and create jobs in the local community and beyond.

· **Solar/Wind:** These projects develop expansive solar and wind farms, generating power that otherwise would have been supplied by fossil fuels like coal, diesel and furnace oil. These projects also create jobs and revenues for local communities.

· **Forestry:** Forest conservation projects prevent deforestation by helping voluntarily forego plans that would have converted forests for other purposes while having additional co-benefits for communities and local wildlife.

· **Sustainable Aviation Fuel:** Alternative fuels have a significant advantage as they can reduce CO2 emissions and do not require many adjustments in the supply chain and operation. It is recognized that huge investments are needed to increase the volume from 0.2%, currently used in international aviation.

Is there more work to be done to reduce aircraft emissions? Of course. The aviation industry acknowledges this and is working with governments and other stakeholders to map out future strategies and alternative solutions for further reduction of GHG emissions. Let's see what the airlines are doing the world over.

JetBlue Airlines

On July 1 2020, the airline began offsetting its carbon dioxide emissions (CO2) from jet fuel for all domestic JetBlue-operated flights. JetBlue views carbon offsetting as a bridgindustry-wide environmental improvements like fuel with lower emissions. Therefore, JetBlue is also investing in sustainable aviation fuel (SAF) and to start, the airline is fuelling flights from San Francisco International Airport (SFO)

KLM

. JetBlue had already offset more than 2.6 billion pounds of CO2 emissions in partnership with CarbonFund.org Foundation— leading U.S. based non-profit carbon reduction and climate solutions organization. JetBlue will offset all emissions from jet fuel for domestic routes and expects to ramp up to offset 15-17 billion pounds (7 to 8 million metric tons) of CO2 emissions each year – the annual equivalent of removing more than 1.5 million passenger vehicles from the road.

JetBlue has started purchasing and flying on sustainable aviation fuel (SAF) from Neste, the world's third most sustainable company and the largest producer of renewable diesel and SAF made from waste and residue materials, starting in July 2020 for flights from San Francisco International Airport (SFO). Neste's SAF will contribute to JetBlue's efforts to reach its climate goals, providing an immediate reduction in greenhouse gas emissions from any aircraft using the fuel.

Delta Airlines

Delta Airlines released a corporate responsibility report on 31 Jul 2020 and remains committed to carbon neutrality during the next decade despite limiting investments today due to the current pandemic. Delta has committed to investing $1 billion toward carbon neutrality on its journey to become the first carbon-neutral airline in the world. The company will achieve this by investing in clean air travel technologies, accelerating the reduction of carbon emissions and waste, and establishing new projects to mitigate the balance of emissions.

Air France-KLM

The airline stated that its environmental strategy remains unchanged despite the crisis, including sustainability commitments, fleet modernisation and optimisation of fuel use to reduce its CO2 emissions per passenger by 50% by 2030 compared to 2005.

DELTA AIRLINES

Indian Aviation

The first flight using blended aviation fuel took place in 2008. Since then more than 150,000 flights have used biofuels. Only five airports have regular biofuel distribution today (Bergen, Brisbane, Los Angeles, Oslo, and Stockholm), with others offering occasional supply.

In India, the first biofuel flight was operated by SpiceJet airlines on 27 Aug 2018 on Bombardier Q400 on the Dehradun-Delhi route, which carried a blend of air turbine fuel (75%) and biofuel (25%). Bio fuel was made from Jatropha crop and developed locally by the Council for Scientific and Industrial Research, Indian Institute of Petroleum.
India imports 82% of its crude oil requirement with net foreign exchange outgo of $ 63 billion. India is the fastest-growing aviation market in the world today and it is our responsibility to grow using clean and sustainable technologies. It is the responsibility of all the stakeholders to increase investment in advanced technology, alternative fuels, and enhanced operational procedures to reduce GHG emissions. The net result would be a safer, efficient, and environmentally sustainable industry.

A lot needs to be done and I humbly request airlines to show the way forward. It is time to go Green.

About the Author

Anil comes with rich experience in military and civil aviation. In a career spanning 27 years and counting, Anil has flown more than 30 different types and is an accomplished experimental test pilot. He was the project test pilot on fighter aircraft upgrade and two indigenous prototype development project, SARAS and Intermediate Jet Trainer (IJT). His expertise lies in aircraft performance, stability and control, flying/handling qualities, avionics, certification, and airworthiness. He also has significant experience in Radars, Electro-Optical Sensors, Communication systems, Displays, HOTAS and Controls, Human-machine interface, Navigation system, Datalink system, and Electronic warfare.
Anil is also a Qualified Flying Instructor with a wide experience of training ab-initio to experienced operational pilots. Anil retired from IAF in 2016 after 23 years of service. He is presently working with SpiceJet Airline as a Line Captain.

INDIGO

Motherhood and Flying

Prajnashmi Mukherjee
B787/777 First Officer

It has been a beautiful journey so far. A journey to follow the passion of flying Airplanes since the age of 18 to becoming a 'Flying Mom' at 31. I, Captain Prajnashmi Mukherjee, in addition to being an experienced Commercial Airline Pilot, is now a proud mother of a 4 months baby boy.

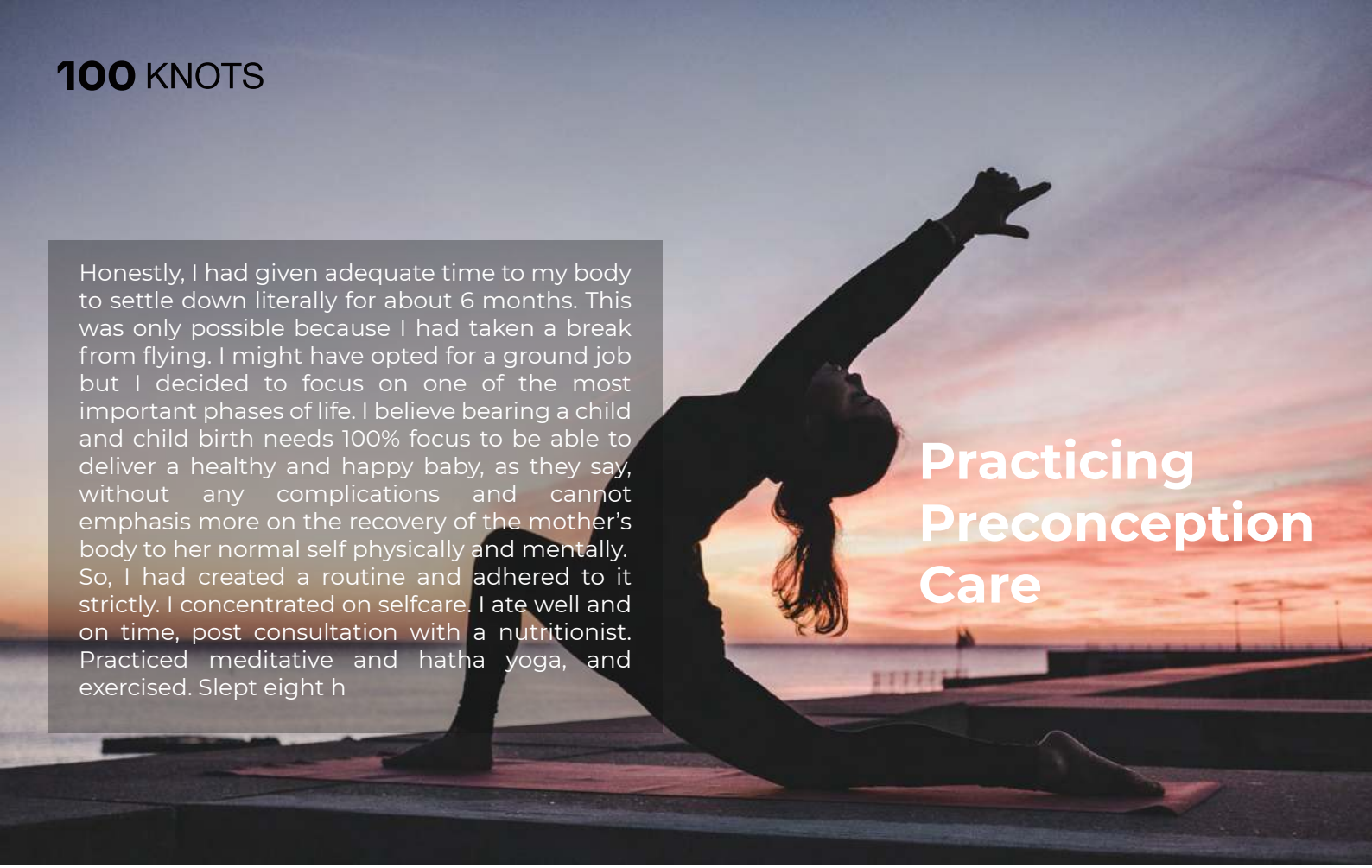
I have always been a checklist-oriented person, but I have settled with the fact that there is no checklist available when you become a mother for the first time. The trick is to take “One Step at a time”, which is working great for me. Until four months ago, if I was asked to describe the best moment of my Life, I would have relentlessly answered “My First Solo Flight” until I held Takshiv, my son, in my arms in the operation theatre for the first time. It seems like yesterday when I woke up in the morning of 30th with a mild pain, by afternoon I was admitted in the hospital. After about 12 hours of active labor followed by an emergency Cesarean Delivery (C-Section), I was blessed with the most precious gift ever imaginable, my sweet baby boy.

I consider myself extremely lucky to have had the opportunity to experience being pregnant and child birthing. It has been a beautiful journey as well as a learning process. This would probably be a documented perspective for women, especially in aviation, who would want to be prepared for pregnancy.

Growing up in a closely knit family, being a mom was something I had dreamt of since a very young age. Starting our family, having a child was on our cards since last couple of years. Both of us being pilots, mostly on long haul routes, it was a challenge to commit to. Even though, it might sound odd, the pandemic turned out to be a blessing in disguise for us. I got enough time to prepare my body to conceive. Yes, a female body which has been exposed to frequent pressure changes, radiation at higher flight levels, regular jet lags, etc must be prepared for conception. Unfortunately, the awareness of “preconception health”, among women and health professionals is remarkably low. The responsibility for providing preconception care to the women aviators is unclear, hence rare. However, I was motivated to learn and adopt the healthier behaviors in the preconception period.

IMPORTANT LESSONS

The period before conception must be treated as extremely important for the health of women and future generations. The importance of a healthy intrauterine environment is underrated. Factors such as maternal diet and nutritional status, which can be modified before conception, have an important influence on the intrauterine environment and fetal development. Emphasis on positive maternal mental health is another topic which must be given equal importance.



Honestly, I had given adequate time to my body to settle down literally for about 6 months. This was only possible because I had taken a break from flying. I might have opted for a ground job but I decided to focus on one of the most important phases of life. I believe bearing a child and child birth needs 100% focus to be able to deliver a healthy and happy baby, as they say, without any complications and cannot emphasis more on the recovery of the mother's body to her normal self physically and mentally. So, I had created a routine and adhered to it strictly. I concentrated on selfcare. I ate well and on time, post consultation with a nutritionist. Practiced meditative and hatha yoga, and exercised. Slept eight h

Practicing Preconception Care

ours a day. I practiced being positive by practicing my hobbies of reading, writing daily, painting, indulge in music, Meditate (Practice Kriya Yoga). I was meticulous and particular about everything I did for myself and others around me. I am quite sure this isn't difficult as it sounds if someone isn't a "follow the (Standard Operating procedure) SOP person". Infact it is fun and amazing to know what we are capable of achieving these along with work stress. The best part among everything I did, was to be grateful to Universe, inspired by the books: The Secret and The Magic by Rhonda Bryne. I had set daily goals for myself. Basically, I was preparing to Welcome a whole new human life within me.

Story after Conceiving...

As I felt, food was the only thing I could provide for the baby growing inside me. It was an easy pregnancy for me, not a great deal of morning sickness, and my cravings were relatively normal food, like watermelon, yoghurt smoothies, nuts, ice cream, etc. I was on an organic diet with lots of fluid and less sugar. I was satisfying my cravings with plant-based sugar, jaggery, dark chocolate and mostly home-made dishes. I mainly followed a healthy lifestyle because I did not want to gain excessive weight during pregnancy, which might delay resuming my career. I knew that I would not be able to lose kilos immediately after the delivery until at least first six months of breast feeding.

Delivery & Postpartum

Inevitably I am still recovering as I write. My body looks different. I feel different. My thoughts are different. I am hypersensitive to this beautiful new child that is now part of my life. The first two months felt like I was hit by a vehicle loaded with rocks. I am taking it day by day as Postpartum is underrated. I am only getting better each passing day. Everybody had briefed me about the first three trimester of pregnancy followed by child birth but the postpartum can be easily treated as the fourth. Thanks to my hobby of reading and to the easily available information over the internet. Sleep deprivation is not a new arena for me, being in flight operation duties. Yet, I always managed to get enough sleep before every flight. The lack of sleep after child birth is absolutely a different scenario. Multi -tasking is another quality which is common between flying and post-delivery, that needs to be mastered. For example, while I write this article, I am nursing Takshiv keeping a correct posture, so that it doesn't lead to backache. Proper eating habits have been on top of my list. Galactagogues are and will be a part of my nursing diet.

You will find me emphasizing on mental wellbeing repeatedly, because 'Life is not a bed of Roses' as they say. I believe no training or treatment would be convenient unless you help yourself to come out of a disturbed state of mind. And that state of mind comes to us as we breathe. It must be treated as a natural phenomenon. Even though I am enjoying the time of life with my bundle of Joy around. I am also in a space wondering the intensity of difficulty to go back to work as much as I want to go back to my happy place of flying. Flying is like meditation to me. I am taking it one day at a time.

If any of us have unknowingly stepped into the zone of mental disturbance, we MUST reach out for help without hesitation. It could be family or professionals. Positive conversation is the way to challenge such state of mind. Parenting webinars are of great help through this phase. I would like to mention here that, for me it has only gotten easier because of my husband, Rohan, who is also a pilot and a new father. Having a supportive partner makes a huge difference.

To find out how moms continue flying recreationally and professionally while raising a family, I reached out to AOPA members and women in Female Aviators Sticking Together (FAST) though social media. I read stories about the importance of the spouses and support systems. I am on a learning curve.

Maternity policy in Airlines

Airline jobs were reserved for men only until about 1973, hence most of the airlines had archaic maternity policies. When the first female pilot started her career, there were no maternity leaves, because there were no female pilots. In the recent times, globally, 5.4% of pilots are Women, according to International Society of Women Airline Pilots (ISWAP).

India has the highest number of Women Pilots, which makes the percentage twice that of the global average. They are compulsorily taken off all flight duties when they report their pregnancy. They are then shifted to desk duties with full pay, excluding flying allowance and performance incentives. Maternity policies and benefits vary widely across different countries and airlines. An amendment to India's Maternity Benefits Act in 2017, increased paid maternity leave from 12 weeks to 26 weeks. In the era of employee welfare, Companies have also looked into Paternity leaves. Needless to mention the importance of it. During and after the pregnancy there are a number of reasons pilots may not be fit to fly and therefore choose not to do so. For example, a pregnant pilot may experience morning sickness, fatigue or a high-risk pregnancy. After delivery, pilots are rarely ready to return to work after 6-8 weeks like other new working moms. Further, breast-feeding and breast pumping is a logistical and medical challenge for new pilot moms. When planning time-off for maternity, it must be ensured what the airline offers in terms of sick time, disability, vacation, maternity leave and personal leaves.

Ideally, new pilot moms stay home up to a year to breastfeed, bond with their newborns. Which I am choosing to do as well. Unfortunately, many pilots cannot afford to stay home because of the loss of income and cost of continued benefits. Many may choose to return to work as soon as able. Many airlines will allow pilots to return to work as soon as they present a valid class-one medical. Training, if required, will be scheduled and then you are back on the line.

Final Words

There never is a perfect time to start a family, keeping in mind career will always be there, the opportunity to have a family might not be there. I always wanted to have a family, and follow my goals along with it. Progress takes hard work. I believe combining motherhood with a rewarding flying career is possible. Juggling family, a flying career requires creative scheduling. This will challenge me and will allow me to grow. Focusing on one thing at a time will make both easier and satisfying. There's something about doing something you love.

About The Author

Prajnashmi Mukherjee is a passionate aviator and holds the Commercial Pilot License in India and Qatar. She has flown as a First Officer with Qatar Airways acquiring a flying experience of 3000+ hours on Boeing 787 Dreamliner and Boeing 777 Aircraft. She received her training from National Flying Training Institute CAE Gondia, where she also worked as an Assistant Flight Dispatcher. Before her flying career took off as a Pilot, Prajnashmi worked as a valued member in the Business Development Team of ARMS (Aviation Resource Management System). Apart from Flying, she has other valued interests in various fields like reading, teaching, sports, one of the most important being writing, and is grateful to 100knots.com to let her reach out to the aviation enthusiasts through her articles. She is married to Capt. Rohan Guha Roy, who flies the Airbus 320 with Air India.

CHASING DAKOTAS

Dipalay Dey

Douglas DC-3 or “Dakota” is a legendary aircraft that holds many laurels and one particularly for its contribution in the Second World War. An eye candy for aviation enthusiasts across the globe, just a handful are actively flying today, including the Indian Air Force’s “Parashurama”. Nevertheless, even for the ones that are preserved, the excitement to photograph them remains the same among aviation geeks.

Introduced in 1935 as a competition to Boeing 247, Dakota’s exceptional qualities were the need of the hour. It was fast, had a good range, more reliable, and carried passengers in greater comfort. Operators like TWA and American Airlines were able to tap into lucrative US transcontinental routes reducing the flying time to just 15 hours as compared to multiple days before. Civil aviation at this point in time was still in its primitive years and aircraft were not capable of flying in darkness, hence such trips were done using multiple short hops in slower and short-range aircraft during the day.

RANDY FATH

HISTORY

Donald Douglas established Douglas Aircraft Company in 1921. Starting off as a small defense contractor, the company first rose to fame with the production of Douglas World Cruiser (DWC), an aircraft specifically designed for the US Navy for their ambitious plan of first circumnavigate the world by air. The aircraft left Seattle, on 6 April 1924, flying west and returned back on 28 September 1924 successfully circumnavigating the world including a stop in Calcutta. The project was seen as a huge success and placed Douglas amongst the league of top aircraft manufacturers. Orders poured from the US Navy and Air force and soon the company was building more than 100 aircraft annually.

Post 1930, Douglas began producing DC series (Douglas Commercial) twin-engine low wing monoplane. While DC-1 and DC-2 saw limited appreciation, their successor DC-3 went on to become one of the most successful aircraft in the history of aviation. Powered by two Pratt & Whitney R-1830 Radial engines with 1200 hp, Dakotas was designed to accommodate a capacity of 30 passengers. The maximum speed could go up to 370km/hr at a height of approximately 9000ft.

Even though Dakotas were designed for civil aviation, the fate quickly changed with onset of the Second World War. Many civilian Dakotas were absorbed in the war effort including the ones on production line belonging to airlines. By the end of war, more than 16,000 units were produced including license built Soviet Union's Lisunov Li-2 and Japan's Showa L2D. The production ceased in 1945 as markets were flooded with post war aircraft and transition to Jet age.

INTRODUCTION IN INDIA

Dakotas first landed in India during the Second World War, serving in the Allied forces and later in the Royal Indian Air Force (Indian Air Force after independence). High service ceiling coupled with good range and speed made it ideal for operations in mountainous border regions adjoining Pakistan, China, and Burma. IAF operated a total of 206 Dakotas between 1946-1987. Post-independence, Dakotas were used during the partition to transport people across the border, the first battle of Kashmir and during the 1971 Bangladesh Liberation War when India sent one to the Kilo Flight of the Mukti Bahini force.

After the war was over, airlines in India, bought war-surplus Dakotas from the allied Forces and converted them into passenger version. During the 1953 Air Corporations Act, where eight regional airlines were merged to form Indian Airlines, IC inherited a total of 74 Dakotas making it the primary fleet. In the following years, Dakotas remained as the workhorse of Indian civil aviation becoming the first aircraft to land in many states.

Dakotas were also popular among the rich and famous of new India, most famous being Shri Ghanshyam Das Birla's who had a personal DC-3 with registration VT-CYT, custom built by Douglas with an extended window frame and improved interior.

INDIAN AIR FORCE

RENOWNED OPERATORS

There were various big and small operators who operated the Dakota airframe. Some popular ones were

Indian Airlines set up under the Air Corporations Act, 1953 by merging 9 regional airlines. Indian Airlines inherited a fleet of 99 aircraft including 74 Dakotas.

Tata Airlines founded in 1932 by JRD Tata, it was the first airline to be established in India. In 1941, the Indian Government leased a Dakota to Tata Airlines for the historic Karachi to Baghdad flight. Later in 1945, Tata Airlines bought its own DC-3s and operated them until 1955 when they were replaced by DC-4s.

Indian National Airways established in 1933, INA was the second airline to be established in India. Like others INA also bought some war-surplus Dakotas from the US Air Force at the end of the war. The INA colony in Delhi is named after this airline.

Mistri Airways also known as Indian Overseas Airlines was started in 1946 by Parsi businessman, Rusi Mistri. It was the first airline to receive night air mail services license. The airline was defunct in 1950 after financial problems.

Orient Airways established in 1946 with its base in Calcutta, it was the first and only Muslim owned airline in India. The airline shifted operations to Pakistan after the partition and in 1955, the government of Pakistan merged Orient Airways with other airlines to form Pakistan International Airlines (PIA). Before partition, the fleet constituted of 4 Dakotas.

Bharat Airways, a venture of Birla group, the airline started operations in 1947. Bharat Airways was merged to form Indian airlines in 1953.

Jam Air established in 1946 by Maharajah Jam Sahib of Nawanagar, the airline was based out of his constituency, Jamnagar. Operations were later shifted to Calcutta Airport for commercial purpose. Airline had a fleet of 5 Dakotas.

Himalayan Aviation headquartered in Calcutta and operated in the northern parts of the Indian subcontinent. Fleet consisted mainly of Dakotas.

Deccan Airways founded in 1945, Airline was based at Begumpet Airport, Hyderabad and a joint venture between the Nizam of Hyderabad and TATA. Fleet consisted of 13 Dakotas.

Air Services of India established in 1936 and later purchased by Scindia of Gwalior, fleet consisted of 11 former US Air Force Dakotas converted for civilian use.

Kalinga Airways founded in 1947 by aviator and politician Biju Patnaik, it was merged into Indian Airlines in 1953. Operations restarted again in 1957 as a non-scheduled operator till 1972. Fleet consisted of 15 Dakotas.

Darbhanga Aviation started by Maharaja Kameshwar Singh of Darbhanga in 1950, airline started operations after the purchase of three former military Dakotas.

Indian Air Force operated a total of 206 Dakotas between 1946-1987. One airframe “Parashurama” has been recently restored in airworthy conditions.

PRESERVIED DAKOTAS

Titus Museum of Transportation and Collectibles in Junapur, New Delhi

The aircraft is registered as VT-CTV and was previously owned by the National Airports Authority. With all the interior intact including the seats and cockpit instruments, this happens to be one of the best preserved DC-3 in India. The specialty of this aircraft is that it still has the U.S. Army Air Corps number plate from 1943 inside its cabin which shows that CTV is a war veteran from the Second World War.

The personal Dakota of Shri Ghanshyam Das Birla preserved inside BITS Pilani in Rajasthan

This particular DC-3 was custom built by Douglas with an extended window frame. Registered as VT-CYT, this aircraft was frequently used by Shri Ghanshyam Das Birla. The airframe was active from 1948-1983.

Roorkee cantonment

This one sadly bears no registration mark but its military history is well documented. In 1972, this aircraft crashed in Solani River in Roorkee after which the aircraft was brought here and preserved. Currently it is located inside a children's park.

Indian Air Force Museum in Palam, New Delhi

This airframe has the tail number IJ302. Previously the airframe was in deep yellow colors but post 2015 the airframe got painted in silver and as of now it is one of the most attractive displays inside the Palam Airforce museum.

Bangladesh Air Force Museum, Dhaka

Among all the stock in the Indian Air Force inventory, the most attractive one was IJ817 and today it graces the soil of Bangladesh. As per the historical chapter, India's Dakota heavily participated in Bangladesh Liberation War and especially in Kilo Flight of Mukti Bahini and as a result, Indian Air Force formally handed over this airframe to Bangladesh Air Force in 2014. The aircraft is neatly preserved and one can visit the cabin, the intact and the cabin.

ABOUT THE AUTHOR

Dipalay takes a keen interest in exploring warbirds and old preserved aircraft which are kept on public display at various corners of the country. His work on aviation photography and paper model ground handling equipment are published in various online and offline media papers. Dipalay comes from Northeast India, born in Silchar, Assam and brought up in Aizawl, Mizoram, he is currently working in Delhi. Dipalay views aviation as a wonderful universe that helped him learn, grow and meet amazing likeminded people. Dipalay loves travelling and his social media accounts give us a clear picture of his interests.

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Alcohol and Aviation

For centuries alcoholic beverages are used by many to "unwind" or relax. Alcohol acts as a social "ice-breaker," and is a way to alter one's mood by decreasing inhibitions. Alcohol consumption is widely accepted, often providing the cornerstone of social gatherings and celebrations. Along with cigarettes, many adolescents associate the use of alcohol with a rite of passage into adulthood. While its use is prevalent and acceptable in our society, it shouldn't come as a surprise that problems arise with the use of alcohol, and therefore the performance of safety-related activities, like driving an automobile or flying an aircraft are affected.

In the aviation environment, alcohol-related problems are made worse by the common belief that accidents happen "to other people, but not to me." There is a tendency to forget that flying an aircraft may be a highly demanding cognitive and psychomotor task that takes place in an inhospitable environment where pilots are exposed to varied sources of stress.

What alcohol does?

Alcohol is a sedative, hypnotic, and addicting drug. It quickly impairs judgment and leads to behaviour that can easily contribute to or cause accidents. Alcohol is rapidly absorbed from the stomach and little intestine, and transported by the blood throughout the body. Its toxic effects vary considerably from person to person and are influenced by variables like gender, weight, rate of consumption (time), and total amount consumed.

The average, healthy person eliminates pure alcohol at a fairly constant rate - about 1/3 to 1/2 oz. of pure alcohol per hour, which is like the quantity of pure alcohol contained in any of the favoured drinks. This rate of elimination of alcohol is comparatively constant, no matter the entire amount of alcohol consumed. In other words, whether a person consumes a few or many drinks, the rate of alcohol eliminatio from the body is essentially the same. Therefore, the more alcohol a person consumes, the longer it takes for his/her body to urge to obviate it.

Even after complete elimination of all of the alcohol within the body, there are undesirable effects-hangover-that can last 48 to 72 hours following the last drink. The majority of adverse effects produced by alcohol relate to the brain, the eyes, and therefore the inner ear-three crucial organs to a pilot. Brain effects include impaired response time, reasoning, judgment, and memory. Alcohol decreases the power of the brain to form the use of oxygen. These adverse effects are often magnified as a result of simultaneous exposure to altitude, characterized by a decreased partial pressure of oxygen.

Visual symptoms include ocular muscle imbalance, which results in diplopia and difficulty focusing. Inner ear effects include dizziness and decreased hearing perception. If other variables are added, like sleep deprivation, fatigue, medication use, altitude hypoxia, or flying in the dark or inclemency, the negative effects are significantly magnified.

How is Alcohol Detected?

A breath analyser may be a battery-operated device that will reveal an individual's blood alcohol content (BAC) by sampling the breath. Law enforcement has used breathalyzers for many years, but a breath analyser can also be handy for individuals. Party guests can avail themselves of a breathalyzer to make sure they will legally and safely drag the wheel to drive home. If the reading is still too high, a simple waiting period can help one avoid disciplinary action.

Institutions and businesses with policies of random alcohol monitoring might use a breath analyser, especially among employees that are entrusted with the care of others, work with potentially dangerous machinery or operate commercial flights.

A breath analyser can detect BAC because alcohol does not change chemical composition within the body. Instead, it's absorbed by the stomach and intestines to enter the bloodstream. Inside the bloodstream, it travels throughout the body, including lung sacs called alveoli, where alcohol molecules are mixed with exhaled air. The ratio of alcohol found in the breath to alcohol in the blood is 2,100:1. Hence, by measuring the concentration of alcohol in the breath, one can easily calculate the blood alcohol content. The legal limit in most states is 0.08% BAC.

How alcohol affects pilot performance?

Pilots have shown impairment in their ability to fly an ILS approach or to fly IFR, and even to perform routine VFR flight tasks while under the influence of alcohol, regardless of individual flying experience. The number of serious errors committed by pilots dramatically increases at or above concentrations of 0.04% blood alcohol. This is to not say that problems don't occur below this value. Some studies have shown decrements in pilot performance with blood alcohol concentrations as low as 0.025%.

A hangover effect, produced by alcoholic beverages after the acute intoxication has worn off, maybe just as dangerous as the intoxication itself. Symptoms commonly related to a hangover are headache, dizziness, dry mouth, stuffy nose, fatigue, indigestion, irritability, impaired judgment, and increased sensitivity to bright light. A pilot with these symptoms would definitely not be fit to safely operate an aircraft.

The use of alcohol and drugs by pilots is regulated by regulatory authorities of that country like DGCA in India. Among other provisions, this regulation states that nobody may operate or plan to operate an aircraft:

- Within 8 hours of having consumed alcohol
- While under the influence of alcohol
- With a blood alcohol content of 0.04% or greater
- While using any drug that adversely affects safety

Keep in mind that regulations alone are not any guarantee that problems won't occur. It is much more important for pilots to know the negative effects of alcohol and its deadly impact on flight safety.

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General Recommendations

As a minimum, adhere to all the guidelines of the regulatory authorities.
• 8 hours from "bottle to throttle".
• Do not fly under the influence of alcohol.
• Do not fly while using any drug that may adversely affect safety.
• A more conservative approach is to wait 24 hours from the last use of alcohol before flying. Contrary to popular belief, cold showers, drinking black coffee, or breathing 100% oxygen cannot speed up the elimination of alcohol from the body.
• Consider the effects of a hangover. Eight hours from "bottle to throttle" doesn't mean you're within the best fitness to fly, or that your blood alcohol concentration is below the legal limits.
• Recognize the hazards of combining alcohol consumption and flying.

Conclusion

Use good judgment. Your life and therefore the lives of your passengers are in danger if you drink and fly. Alcohol avoidance is as critical as developing a flight plan, an honest prefight inspection, obeying ATC procedures, and avoiding severe weather. Total avoidance of alcohol should be a key element observed by every pilot in planning or accomplishing a flight.

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ABOUT THE AUTHOR

Sanjay Bhargava is a consultant Aerospace medicine specialist is a renowned Class 1 medical examiner empanelled with DGCA. He is an alumnus of Armed Forces Medical College Pune. After completing his post-graduate in Aerospace medicine from the Institute of Aerospace medicine Bangalore, he worked as a specialist in Aerospace medicine in various appointments in Indian Air Force. He is a DGCA Class 1 examiner with extensive experience at AFCME, Delhi, AFS Tambaram, and as President MEC (EAST), Jorhat. He has been responsible for finalizing various policies at DGCA. He was the lead doctor for starting civil medical canters for class 1 medicals for DGCA. Over a while, he has been assisting aspiring pilots and solving their DGCA related medical issues through his website http://dgcamedical.in. He has a large following in social media and is respected for his advice given to pilots for the last 3 decades.
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Pilot Training in Lithuania

Pursuit to become a pilot

My love for flying is a 14 year old love story. Initially, it was the exhilarating feeling of being pushed back against the seat and the view from above the sky. As I grew older, I began to learn more about aviation and have been a flight simulator enthusiast. The idea of an unconventional lifestyle with a lot of responsibility and trust, witnessing the break of dawn at work from up above, while the rest of the world sleeps intrigues me. In 2021, I was fortunate enough to join a Cadet Program for an ACMI & Charter airline in Lithuania; a dream come true moment.

Training Progress

I am currently in the theory phase of training. I have completed 7 EASA ATPL theory subjects with 6 more to go. The course is highly demanding, with classes from 9 to 5 with hardly any holidays. In a span of 8-10 months, 13 subjects are to be taught, along with 13 CAA exams, 26 school exams and countless progress tests. Initially it was difficult to catch up with the pace and intensity of the course, but I grew comfortable with the workload. Nevertheless, I am loving every minute of this course.

My school - Airhub Training is a part of an airline setup and operates in the same building as the airline. We breathe and live in the airline atmosphere, learning a lot about flying and aviation in general from pilots and other employees of the airline. I feel privileged to learn from passionate instructors who are mostly pilots and have a wealth of knowledge.

Training in Europe compared to India

I feel the training here is more structured, with an emphasis on theory. For the EASA Integrated ATPL program, ground school lasts longer, with 13 subjects. On course completion, we get an EASA frozen ATPL which is technically CPL ME/IR with ATPL theory. As I am a cadet, type rating, base training and line training are a part of my course.

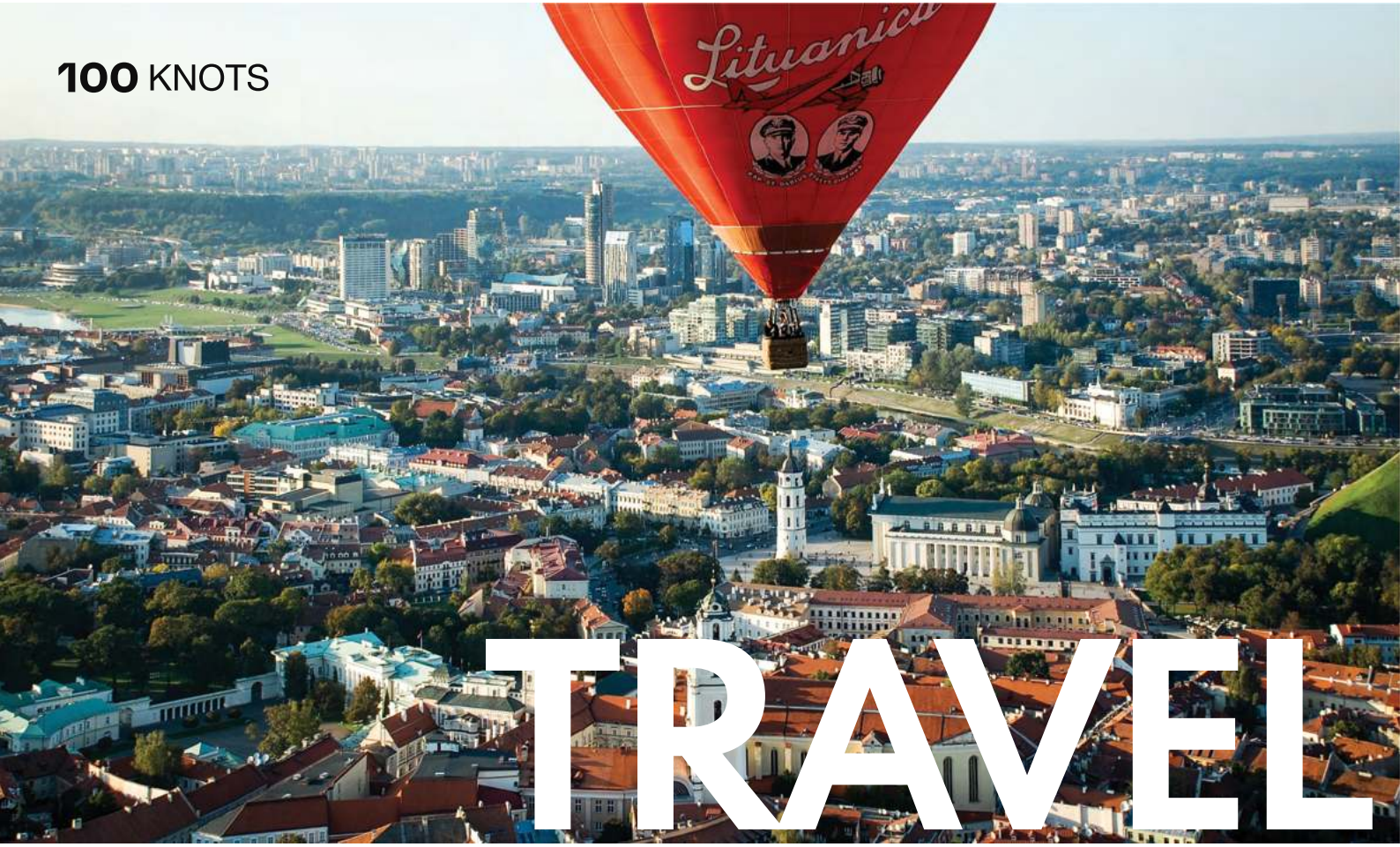
The high standards of training are aimed towards creating better pilots who are ready to transition to airline flying. There is a greater focus towards competency based training. With the introduction of Area 100 KSA subject, aimed at helping student pilots to develop and demonstrate technical & behavioral competencies, we are tested and given feedback to develop our core competencies.

One important factor to note is that converting an EASA license to DGCA license can be difficult and expensive at times as our flight training syllabus can include a considerable amount of hours spent in a procedural trainer (FNPT II simulator) during the instrument flying phase.

Aviation in Lithuania

From pilot training schools to flying clubs for hobby flyers, glider flying, aerobatic competitions and hot air balloons, there is a lot going on. But one quirky thing to note is that the flying season is restricted by the weather, mostly lasting from April to October.

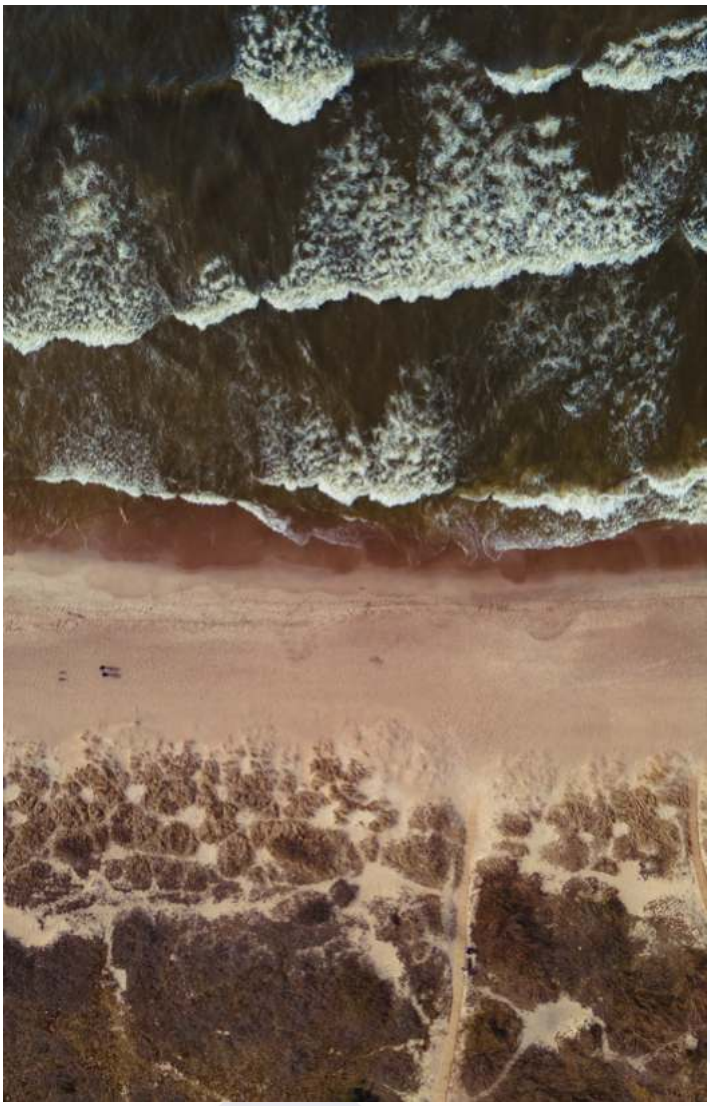
While Lithuania no longer has a national airline, the aviation sector is led by ACMI airlines and other kinds of services. ACMI stands for Aircraft. Crew. Maintenance. Insurance. It's a form of aircraft leasing arrangement made between two airlines, whereby one airline (the lessor) provides aircraft with crew to operate for another airline (the lessee). ACMI service (wet-lease) is arranged by airlines to overcome capacity shortfalls during peak demand or in situations when they do not have enough aircrafts to operate. It is interesting to note that some Indian airlines had availed the service of Lithuanian ACMIs and even continue to do so, for both passenger and cargo operations.



TRAVEL

Lithuania lies in the Baltic region of Europe and is one of three Baltic states on the eastern shore of the Baltic Sea. Located in southeast, Vilnius is the capital and largest city. Lithuania is a developed country, with a high income advanced economy and ranking very high in the Human Development Index. Lithuania is also a member of the European Union, eurozone, and the Schengen Agreement.

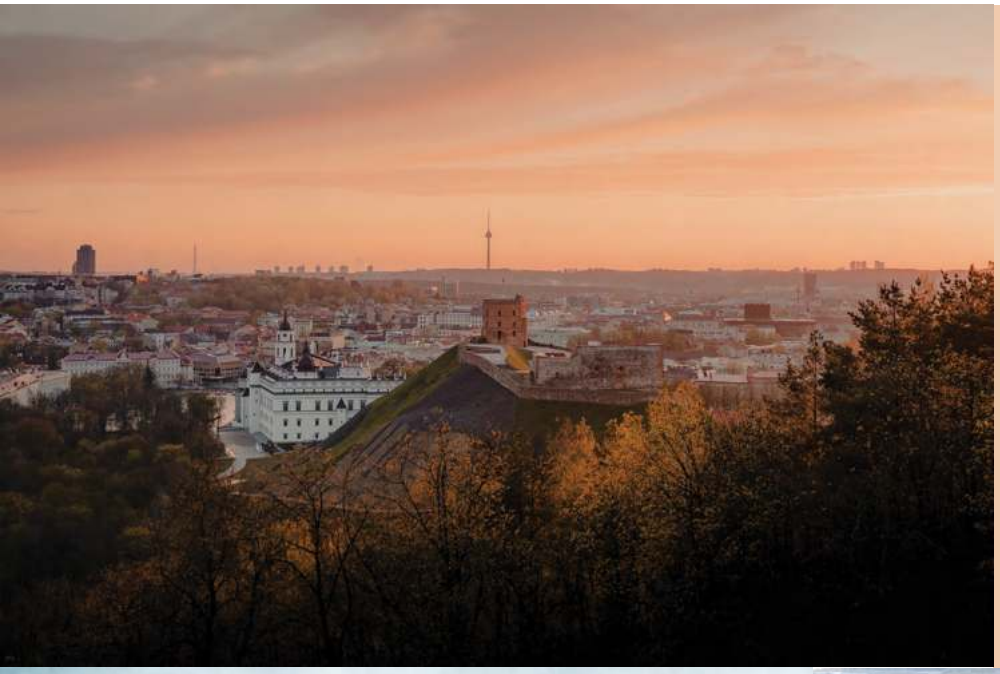
Lithuania's historic heritage sets it quite apart from the neighboring Baltic states. Few might guess that this was once the largest nation in Europe, stretching out far into modern day Russia, Poland and Moldova. Modern Lithuania gained its independence from Russia in 1918 following World War I. This independence however didn't last long. In World War II, Lithuania was occupied first by the Soviet Union and then by Nazi Germany. Towards the end of the war in 1944, when the Germans were retreating, the Soviet Union reoccupied Lithuania and stayed until 1990, a year before the collapse of the USSR. Lithuania was infact the first of the Soviet republics to declare its independence.



Getting in and Around

Lithuania is a member of the Schengen Agreement. Main port of entry is Vilnius International Airport that has connections to all major European cities. If you are coming via Russia or neighboring Baltic states, trains and buses can also a good option. While Lithuanian is the predominant language, English is spoken by majority of population. Keep your Google Translate handy, especially in stores, where most products and details are written in Lithuanian.

What to see



Vilnius

Known for its spectacular Old Town, Vilnius was declared a UNESCO World Heritage Site in 1994. It's the perfect place to admire a range of architectural styles, as it boasts a mixture of gothic, renaissance, baroque and neoclassical buildings. With some 65 churches, the famous Gediminas Tower, the Cathedral Square, the Royal Palace, the Presidential Palace and many other monuments and museums, you won't run out of things to see in Vilnius.

Seaside resort of Palanga

A World Heritage Site shared between Lithuania and Russia, this beautiful town on the west coast has some great beaches and beautiful sand dunes overgrown with pine forest

Trakai Island Castle

Also called "Little Mariënburg", this castle is located on an island and was one of the main strongholds in the prime days of the Grand Duchy of Lithuania. Although it was severely damaged in 17th century wars, the castle was beautifully restored in the 20th century and is now a popular tourist sight.

NATIONAL PARKS

Lithuania is all about embracing nature, something that has been beautifully preserved in its national parks. Lithuanians describe their land with poetry and songs, filled with romantic images rolling hills, valleys, rivers and forests rich of animals. There are 5 National and 30 regional Parks to explore and they are all Free and open all year round.

My personal favorite is Aukštaitija National Park. Home to animals like elk, deer and wild boars, the park is a safe haven for many plants and birds that are endangered in the rest of the country. Park is also blessed with 126 lakes and countless streams in between them, making it a great place for water sports activities.

EAT

The food culture is very diverse and I savor the multicultural gastronomy here. My favorites are

Cepelinai meat filled potato-starch based zeppelin-shaped masses traditionally slathered in a sauce of sour cream, butter, and pork cracklings.

Kibinai small turnovers usually filled with spiced lamb, and Cheburekai (a Russian snack), large folds of dough with a scant filling of meat, cheese, or even apples.
To my surprise, there is a fair number of Indians living here.

While the majority are students, plenty of Indians work here and some even settled here. Indian food is somewhat popular here, and plenty of restaurants to choose from.

LIFE AS A STUDENT

Lithuania has one of the best educational systems in the World, reason why a lot of Indian students chose to study here.

I live in Vilnius, the capital of Lithuania with a population of half a million residents. The cost of living is considerably lower, with an average per month student budget of 400-600 euros to live comfortably.

Before arriving, I dreaded the cold climate of Lithuania. Having survived the winter season, I can safely say it is painless. With appropriate clothing, I did not face any difficulty even when the temperature dropped to -20 C. Though I did miss sunshine and outdoor activities, the beautiful snowy outdoors and indoor activities made up for it. Gloomy days will soon be gone and it's about time to experience the pleasant summer that lasts for a few months.

Overall, there is a sense of content in living here. I enjoy the slow pace of life, walking the narrow-cobbled streets of the old town, the picturesque path of Neris river, and of course the thriving nightlife.

ABOUT THE AUTHOR

Toby James is an Airhub Training student and a cadet pilot for GetJet Airlines in Lithuania. He was born in India and lived in Qatar till he graduated from high school. He considers himself to be deeply passionate about aviation. Toby James discovered his calling to become a pilot at a young age. The 19 year old is currently in Lithuania doing a cadet program, turning his dreams into reality.

Toby's favorite aviation quote:

"Aviation in itself is not inherently dangerous. But to an even greater degree than the sea, it is terribly unforgiving of any carelessness, incapacity or neglect."

- Captain A. G. Lamplugh

Airbus - Jean-Vincent Reymondon

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