ICAO
INTERNATIONAL CIVIL AVIATION ORGANIZATION
Vol. 2, No. 2 – Nov/Dec 2012

TRAINING REPORT

FACING CHANGE TOGETHER

Partnering to meet the demands of tomorrow

AXIS
FLIGHT TRAINING SYSTEMS

We take Flight Simulation to a new level

AXIS Full Flight Simulators for all types of aircraft are manufactured in Europe to the highest standards of quality. Constantly developed bearing the operator in mind, they are reliabe, durable and easy to maintain. By utilising a modular, cost-effective architecture they are tailored to your highest demands. Experience greatly reduced unexpected downtime through innovative features such as the unique modular I/O system, automated simulator startup and automated simulator self testing capabilities. Our Simulators advanced fidelity, electric motion and collimated vision systems ensure FFS Level D qualification to FAA and EASA regulations. Complemented by online monitoring and 24/7 customer support an AXIS Full Flight Simulator means added value for your training experience.

www.axis-simulations.aero

ICAO TRAINING REPORT
VOLUME 2, NUMBER 2, 2012

Editorial
Aviation Safety Training Section
Editor-in-Chief: Dawn Flanagan
Tel: +1 (514) 954-8219 ext. 7997
E-mail: dflanagan@icao.int

Content Development
Senior Editor: Laurie Seline
Tel: +1 (514) 954-8219 ext. 5818
E-mail: lseline@icao.int

Production and Design
Bang Marketing
Stéphanie Kennan
Tel: +1 (514) 849-2264
E-mail: info@bang-marketing.com
Web Site: www.bang-marketing.com

Advertising
FCM Communications Inc.
Yves Allard
Tel: +1 (450) 677-3535
Fax: +1 (450) 677-4445
E-mail: info@fcmcommunications.ca

Submissions
The *ICAO Training Report* encourages submissions from interested individuals, organizations and States wishing to share updates, perspectives or analysis related to global civil aviation. For further information on submission deadlines and planned issue topics for future editions of the *ICAO Training Report*, please contact Dawn Flanagan, Editor-in-Chief at: dflanagan@icao.int

The publishers extend their thanks to the companies, organizations and photographers who graciously supplied photographs for this issue.

Published by
International Civil Aviation Organization (ICAO)
999 University Street
Montréal, Québec
Canada H3C 5H7

Printed by ICAO

Contents

2 **Message from Richard Macfarlane, Chief, Integrated Infrastructure Management, ICAO**
Tomorrow's Aviation System: Meeting the Training Challenges Together

6 **The International Pilot Training Consortium: A Coordinated Effort to Improve Pilot, Instructor and Evaluator Training**
IPTC Chairman Peter Barrett explains the role of the newly created Consortium.

10 **Overcoming the Corporate Culture Wall to Enhance Flight Safety and Efficiency**
Greg Hindson of L'Ecole Nationale de l'Aviation Civile (ENAC) reports on a push towards improving pilot / air traffic controller cooperation and mutual understanding.

14 **AABI and ICAO: Collaborating on a Global Stage**
Ceci Shirley discusses the role of the Aviation Accreditation Board International (AABI) and highlights the accomplishments of the recent Annual Meeting hosted by ICAO.

17 **Hiring Pilots during a Shortage: Some Cautions**
Pilot selection expert, Dr. Diane Damos illustrates the perils of modifying selection criteria during a shortage of pilots.

20 **Manpower Strategies for Tomorrow's Aviation Workforce**
Angela Ng of the Civil Aviation Authority of Singapore (CAAS) discusses what Singapore is doing to address the challenges of meeting the need for more aviation professionals.

26 **The International Federation of Air Traffic Safety Electronics Association (IFATSEA)**
An interview with Thorsten Wehe, IFATSEA Director, European Region discussing the role of Air Traffic Safety Electronics Personnel (ATSEPs).

28 **TRAINAIR *PLUS*: 1st Global Symposium Emphasizes Partnership to Address Change**
A discussion on the Programme's 1st Global Symposium and future plans.

32 **ACSA Proves that Cooperation is the Key to Success**
The Agencia Centroamericana para la Seguridad Aeronáutica (ACSA) explains the importance of regional cooperation and ACSA's role in assisting States in implementing ICAO SARPs.

36 **"Daddy, I don't want to grow up to be an airline pilot."**
Greg Darrow, Senior Director of Sales and Marketing, Pan Am International Flight Academy discusses innovative ways to attract future pilots to the profession.

40 **ICAO and the Universal Postal Union: Collaborating to Ensure Mail is Transported Safely by Air**
Katherine Rooney, Chief, Dangerous Goods Section, ICAO explains how ICAO and the UPU are collaborating to improve handling of dangerous goods transported by airmail.

43 **Cooperative Strategies to Sustain Human and Intellectual Capital within the Aviation Industry**
IATA's Ismail Albaidhani offers his perspective on meeting the pressing needs of the industry in the decades to come.

ICAO NEXT GENERATION OF AVIATION PROFESSIONALS (NGAP) AND TRAINAIR *PLUS* REGIONAL SYMPOSIA

THESE EVENTS PROVIDE UNIQUE OPPORTUNITIES TO EXCHANGE VIEWS, BEST PRACTICES AND EXPERIENCES ON HOW TO ENSURE THAT ENOUGH QUALIFIED AND COMPETENT AVIATION PROFESSIONALS ARE AVAILABLE TO OPERATE, MANAGE AND MAINTAIN THE FUTURE OF THE INTERNATIONAL AIR TRANSPORT SYSTEM. THEY ALSO REPRESENT AN IDEAL FORUM TO DISCUSS HUMAN RESOURCES, PARTNERSHIPS AND TRAINING ISSUES WITH ICAO, REGIONAL ORGANIZATIONS, STATES, TRAINING ORGANIZATIONS, OPERATORS AND THE INDUSTRY.

MARK YOUR CALENDAR

JAMAICA
MONTEGO BAY
5 to 7 February 2013
Hosted by: Jamaica Civil Aviation Authority

INDONESIA
BALI
23 to 25 April 2013
Hosted by:

TURKEY
ISTANBUL
17 to 19 June 2013
Hosted by: Turkish Aviation Academy

SOUTH AFRICA
JOHANNESBURG
10 to 12 December 2013
Hosted by: ATNS

For more information: **www.icao.int/trainairplus**

TOMORROW'S AVIATION SYSTEM: MEETING THE TRAINING CHALLENGES TOGETHER

Air traffic growth expands two-fold once every 15 years. This growth can be a double-edged sword. On one hand, traffic growth is a sign of increased living standards, social mobility and generalized prosperity. On the other hand, air traffic growth can lead to increased safety risks if it is not properly supported by the regulatory framework and infrastructure needed. The challenge for States and the entire aviation community is to achieve both safety and operational improvements on a globally harmonized, environmentally responsible and cost-effective basis.

In order to meet this challenge, ICAO worked with States, industry and international organizations to develop the Aviation System Block Upgrades concept. The objective of this concept is to ensure that aviation safety is maintained and enhanced, that Air Traffic Management (ATM) improvement programmes are effectively harmonized, and that barriers to future aviation efficiency and environmental gains can be removed at reasonable cost. The core of the Block Upgrade concept is a pragmatic system of Modules providing complete operational improvements linked to four specific and interrelated Performance Improvement Areas (PIAs): airport operations, globally-interoperable systems and data, optimum capacity and flexible flights and efficient flight path.

Each Module is intended to organize a group of elements into an operationally driven, cost-effective upgrade that involves: a clearly defined and measurable operational improvement; the equipment and/or systems needed onboard aircraft and on the ground to make it happen; the accompanying airborne and ground procedures; a positive business case over a clearly defined period of time; and an operational approval or certification path.

ICAO held the Twelfth Air Navigation Conference, from 19 to 30 November 2012, at its headquarters in Montréal. The Block Upgrades were at the center of the Conference, which provided the opportunity for the global aviation community to formalize the near- and mid-term future of aviation infrastructure and airborne equipage and resulted in a series of significant outcomes.

Participants provided recommendations on ICAO's technical work programme through the endorsement for the short-term Aviation System Block Upgrades, with notional agreement on those that were presented to the Conference as Block One.

The Conference also defined a clear strategic direction for future civil aviation infrastructure that provides certainty of investment for both States and Industry. This was accomplished through the endorsement for the medium and long-term Aviation System Block Upgrades, with notional agreement on those that were presented to the Conference as Blocks Two and Three.

The introduction of the Blocks and the new technologies and procedures underlying them means that aviation professionals will require training in order to actively participate in the implementation, deployment and ongoing operation of tomorrow's aviation system. Developing strategies for the future means that the aviation community may be dealing with new concepts and ways of doing business. Training will be required to address issues such as: the evolution of data link, Flight and Flow Information for a Collaborative Environment (FF-ICE), Trajectory-based Operations and human performance.

Now that the Conference has come to a close, ICAO has a great deal of work ahead. The Organization was tasked to develop all the necessary material to assist States and Industry in implementing the Block Upgrades, particularly the near-term upgrades that are a part of Block 1. Standards and Recommended Practices (SARPs), guidance material, and training aids are among the components needed to support implementation. As was the case throughout the development of the Block Upgrades concept, ICAO will be working closely with States, the international community and relevant stakeholders to assist in the development of all these different components, of which training is a key aspect.

The ICAO website contains detailed information regarding the Organization's initiatives for the modernization of the aviation system. As part of ICAO's training efforts, a series of events will be held from now until 2015 addressing both technical and political issues surrounding the development and implementation of tomorrow's aviation challenges, including several TRAINAIR *PLUS* events throughout 2013 and 2014 and the 2nd Next Generation of Aviation Professionals Symposium in 2014. I invite you to visit the Organization's website to obtain more information. ■

Richard Macfarlane
Chief, Integrated Infrastructure Management Section, ICAO

cae.com

Complete Pilot Training Solutions

Keep one step ahead with CAE's complete cadet-to-captain pilot training solutions.

CAE provides flexible and customized solutions designed to enhance the safety, efficiency and effectiveness of your airline:

- Candidate identification, selection, training and placement with your airline
- Ab initio training through the world's largest network of CPL/ATPL/MPL flight schools
- Type-rating training through the world's largest network of commercial aircraft training centres
- Innovative training science, regulatory support and aviation's leading suite of integrated training tools, from e-Learning to full-flight simulators

For 65 years, CAE has been a trusted partner to aircraft manufacturers, airlines, business aircraft and civil helicopter operators around the globe.

Have a conversation with CAE about your pilot needs.

CAE

one step ahead

conversation@cae.com

THE INTERNATIONAL PILOT TRAINING CONSORTIUM:

A Coordinated Effort to Improve Pilot, Instructor and Evaluator Training

ABOUT PETER BARRETT, OBE BSc FRAeS

After a period in aviation research with the Royal Aircraft Establishment, Bedford, Peter Barrett joined the Royal Air Force as a pilot. He retired in 2004 having accumulated over 5,000 flying hours on 22 different aircraft types as a line pilot, instructor, examiner and squadron commander. A graduate of both the RAF Aerosystems Course and RAF Staff College, he spent the second half of his career in the Ministry of Defence in London and elsewhere leading studies, managing projects and serving in a number of strategic policy and plans appointments. He was elected Fellow of the Royal Aeronautical Society in 1993 and was appointed to the Order of the British Empire in 1995. In 2012, Peter was awarded the Sir Robert Hardingham Presidential Sword by the President of the Royal Aeronautical Society for outstanding service to the Society. He is the Executive Chairman of the International Pilot Training Consortium, a joint initiative by IATA, ICAO, IFALPA and the RAeS, and is a former Chairman of the Society's Flight Simulation Group. Peter currently chairs both the Annual International Flight Crew Training Conference Committee and the Society's Learned Events Group. He also serves on the Society's Learned Society Board.

Synopsis. The International Air Transport Association (IATA)[1], the International Civil Aviation Organisation (ICAO), the International Federation of Air Line Pilots Associations (IFALPA)[2] and the Royal Aeronautical Society (RAeS)[3] in the United Kingdom have agreed to work in partnership on pilot, instructor and evaluator training and qualification in the commercial air transport sector through a unique new body: the International Pilot Training Consortium (IPTC).

THE BACKGROUND

Advances in training and aircraft design have made commercial aviation the safest mode of public transport. However, the goal is to make it even safer by further reducing the accident rate. Since the late 1940s, commercial aviation organisations worldwide have made significant investments in pilot training initiatives, with the aim of improving safety, principally on their own.

Although these initiatives have generally met with success, they stretch the resources of individual organisations and may result in divergent solutions to shared challenges; moreover, they cannot benefit from the synergies that can result through a combined and coordinated effort. A paradigm shift is needed through a sustained collaborative effort.

A considerable body of work has been undertaken in recent years by IATA, ICAO, IFALPA, the RAeS and other organisations on standards, processes, systems and

devices used in training and qualifying commercial pilots. This work includes the IATA Training and Qualification Initiative (ITQI), launched in 2007, which aims to provide civil aviation with the tools to develop more effective recruitment, selection and training processes for pilots and maintenance staff. It is planned that the ITQI proposals to introduce Evidence Based Training (EBT) and competencies for instructors and evaluators will be reflected in amendments to ICAO Document 9868, *Procedures forAir Navigation Services: Training* (PANS-TRG).

In addition, and recognising the need to extend the scope of the development of harmonised training and to address outreach and industry attractiveness, ICAO undertook the Next Generation of Aviation Professionals (NGAP) programme in light of the forecast increased demand for pilots and other aviation professionals and the evidence of a reduction in the attractiveness of such careers to young people. At a workshop in Paris in November 2010, IFALPA developed a set of best practices, including instructor standards, to provide for the most effective pilot training programmes.

There are few silver bullets, and the IPTC makes no claim to be one. However, the partnership is unique and aims to make the necessary advances by leveraging the capabilities, membership and global reach of the four partner organisations.

The RAeS has led work internationally since 1989 on the qualification of Flight Simulation Training Devices (FSTDs) which culminated in the publication of ICAO Document 9625 *Manual of Criteria for the Qualification of Flight Simulation Training Devices*; this ICAO Document is being maintained and the work is being progressed further through the International Committee for FSTD Qualification (ICFQ) hosted by the RAeS. The RAeS has also undertaken work since 2005 specifically targeted on flight crew training, instruction and evaluation, which has been progressed under the auspices of the International Flight Crew Training Committee.

Much of the work of these four organisations and other bodies is undertaken with a view to the outcomes being implemented by Civil Aviation Authorities (CAAs), but it is also recognised that rulemaking alone is insufficient.

THE NEW PARTNERSHIP

While not duplicating any existing or projected work, the IPTC will comprise a partnership between IATA, ICAO, IFALPA and the RAeS to effect the much needed coordinated effort. The IPTC's objectives are to introduce measures to further reduce the accident rate and, at the same time, seek to ensure that there are sufficient competent pilots to meet the needs of the forecast growth in commercial aviation. In short, the IPTC will facilitate the necessary game changer. In line with the theme of this Training Report, the partnership is very much in the business of facing change together. The IPTC mission statement is:

*The objective of the **International Pilot Training Consortium** is to improve safety, quality and efficiency of commercial aviation by developing international agreement on a common set of pilot training, instruction and evaluation standards and processes for the benefit of the industry worldwide and that will result in ICAO provisions.*

THE NEW APPROACH

There are few silver bullets, and the IPTC makes no claim to be one. However, the partnership is unique and aims to make the necessary advances by leveraging the capabilities, membership and global reach of the four partner organisations.

A Steering Committee, comprising members of each of the four partner organisations, will provide guidance and direction to a number of workstreams specialising in key components of the IPTC work. In view of its charter, and its complete independence from any other body or grouping in the industry, the RAeS is providing the IPTC Executive Chairman. The Chairman of each workstream is an appropriate subject matter expert and each of the workstream Chairmen is a full member of the Steering Committee.

The principal areas of IPTC work will be in assisting with the proof of concept, validation and implementation of the Multi-Crew Pilot Licence (MPL) - the first new pilot licence since ICAO was formed; taking work forward on implementing EBT and Competency Based Training (CBT); validating and developing

The objective of the **International Pilot Training Consortium** is to improve safety, quality and efficiency of commercial aviation by developing international agreement on a common set of pilot training, instruction and evaluation standards and processes for the benefit of the industry worldwide and that will result in ICAO provisions.

Although these initiatives have generally met with success, they stretch the resources of individual organisations and may result in divergent solutions to shared challenges; moreover, they cannot benefit from the synergies that can result through a combined and coordinated effort. A paradigm shift is needed through a sustained collaborative effort.

the ICAO competency frameworks for pilots and instructors; seeking to increase the implementation by CAAs of the ICAO provisions for FSTDs and expanding the mutual recognition by CAAs of FSTD qualifications; undertaking work that seeks to increase the number of pilot applicants worldwide; and increasing the adoption of best practice, innovation and excellence throughout the pilot training, instructing and qualification sector.

National CAAs, regional agencies and other key safety organisations are being invited to work with the Consortium, and some of them have already offered to assist with this important work in advance of the formal invitations being issued. A key principle is openness and transparency, and all agreed IPTC outputs will be made freely available to anyone in the industry with a legitimate interest.

RESOURCES

It is recognised that there will be resource implications for the IPTC work and, while the four partner organisations are giving the initiative their full support, including making staff and certain facilities freely available, they are unable to support this initiative financially. Much of the cost will be offset by inviting industry to agree that subject matter experts who assist with the development of IPTC outputs will do so free of charge while continuing to be supported by their companies. Moreover, although most of the work will be conducted electronically, some face to face meetings will be required, and local regional meetings and seminars will utilise meeting facilities provided free by the industry under the auspices of one of the partner organisations.

Notwithstanding, a residual core overhead of essential costs will remain and, as they will be the potential beneficiaries of the IPTC outcomes, companies in the commercial aviation, aircraft and FSTD manufacturing, and pilot training provision sectors will be invited to contribute a small amount annually to defray these costs for which appropriate recognition will be given.

FUTURE DEVELOPMENTS

The websites and conferences hosted by the four IPTC partner organisations will be used to report progress and further develop-ments. An IPTC website[4] has been created to facilitate the publication of agreed IPTC material and provide a convenient means for members of the industry to comment on areas of IPTC work. I, and my colleagues involved in this important development, look forward to engaging with as many of you as possible as a means of ensuring the best possible outcomes of this unique partnership. ■

---

[1] **IATA** has developed over the past 60 years the commercial standards that built a global industry. Today, IATA's mission is to represent, lead and serve the airline industry. Its members comprise some 240 airlines - the world's leading passenger and cargo airlines among them - representing 84% of total air traffic.

[2] **IFALPA** was founded in April, 1948. Its purpose is to provide a formal means for the airline pilots of the world to interact with ICAO, and its mission is to be the global voice of professional pilots by providing representation, services, and support in order to promote the highest level of aviation safety worldwide. Today, IFALPA numbers over 100 Member Associations and represents in excess of 100,000 pilots from around the world.

[3] **The RAeS**, established in 1866, is the world's only professional body dedicated to the aviation community. The Society aims to further the advancement of aeronautical art, science and engineering around the world. It remains at the forefront of developments in aviation and aerospace, seeking to uphold the highest professional standards in all disciplines, promoting professional development and recognition, and acts as a central forum for the exchange of ideas.

[4] Applications to join the IPTC website can be made through: conference@aerosociety.com

OVERCOMING THE CORPORATE CULTURE WALL TO ENHANCE FLIGHT SAFETY AND EFFICIENCY

A push towards improving pilot/air traffic controller cooperation and mutual understanding

ABOUT GREG HINDSON
Since 2010, Greg Hindson has been the Head of ATC Training / Development and Prospective within the ATM Department of ENAC in Toulouse, France. Along with his day-to-day activities, he has been involved in the design and development of the European Common ATCo Course and is the French representative within the ICAO NGAP ATM Task Force. He has also played a significant role in the development of various combined training initiatives involving pilots and air traffic controllers.

With 920 staff, 11 different locations throughout France, 8,000 students enrolled in a broad range of courses, four laboratories dedicated to aerospace research and development, a fleet of 120 aircraft (53,000 flight hours) and a wide array of flight and air traffic control high-fidelity simulators, L'Ecole Nationale de l'Aviation Civile (ENAC) is Europe's largest civil aviation university.

ENAC is not focused solely on domestic training, but is also internationally oriented, as it delivers eight Masters Degrees in Aerospace Engineering. ENAC's international focus also extends to partnerships with Chinese training institutions where it is providing both ATCo and ATSEP training.

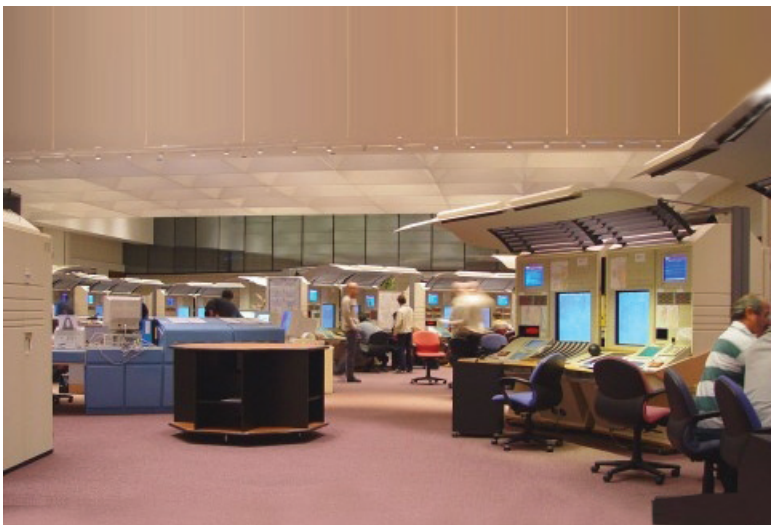
As far as flight and air traffic control training is concerned, ENAC is a leader, as it is a fully accredited Flight Training Organization (FTO) and also has the ENAC Air Traffic Control Training programme, which is now fully compliant with the License Master Doctorate (LMD) requirements (in accordance with the Bologna process certification scheme) conferring a Masters Degree, over and above the European ATCo License, to graduate-controllers upon course completion.

One would expect such a complex organization to grind and balk at the challenges of organizational change. On the contrary, this highly selective institution, founded in 1949, has undertaken significant re-organization over the past months and years, while simultaneously driving many leading edge projects, such as Pilot – Air Traffic Controller combined training initiatives which target enhanced flight safety and efficiency.

DEVELOPMENTS IN THE ORGANIZATIONAL STRUCTURE THAT MAKE CHANGE POSSIBLE

As in most countries, the French Civil Aviation Administration maintained its Air Traffic Control training organization (i.e. ENAC) separate from its national Pilot training organization, the Service d'Exploitation de la Formation Aéronautique (SEFA) for many years. Finally, ENAC and SEFA merged in January 2011. The two training organizations are now united under the ENAC banner and the merged entity has undergone numerous structural changes involving the demanding process of specification of new objectives and strategies.

Grouping ENAC training entities into larger departments, each one with its specific area of expertise (Air Transport, Air Traffic Management, Communication/



Navigation/Surveillance, Flight Training, Language and Human Sciences) has resulted in an organizational chart where any one of the subject matter experts from these departments are potentially involved in the development and conduct of a variety of training courses (e.g. Pilot, ATSEP or Air Traffic Control training).

In doing so, the cross-culture training defined as part of the ENAC development strategy actually leads to the need for each subject matter expert to become constantly aware of the different ways a given subject can be covered depending on the group of students in the classroom (e.g. highlighting the different possible interpretations of the same data).

In addition, the Flight Safety Division, which is in charge of ENAC's fleet of 120 aircraft, now has the ability to conduct Experience Feedback initiatives for the benefit of all students (Pilots, ATCo, Masters, Engineers) on the campus, including films made on the basis of real incident replays on the various simulators.

OPTIMIZED CROSS-CULTURE TRAINING INITIATIVES

When focusing specifically on ATC training, it was discovered that a significant number of aspects of cockpit training were usually covered (aerodynamics, aircraft performance, avionics) during the training, whereas for pilot training, the result was significantly "poor" in terms of ATC awareness.

In order to determine how to bridge the gap in understanding between controllers and pilots, a task force was created with the mandate to enhance ATC training. This resulted in consolidating the existing components of the training and increasing the ATC customer focus. In addition, beyond the existing Private Pilot License course, one can now find the use of ATC emergency checklists developed in cooperation with experienced pilots or the opportunity to attend student pilot "crisis management" simulations (in partnership with Airbus).

Another task force has been involved in the specification of additions to the ENAC ATPL course that will help the student pilots develop their understanding of the ATC constraints (equipment characteristics, specific procedures, airspace structure, sequencing techniques, flow management, etc).

Finally, the need to identify which subjects could be delivered to a mixed group of students (pilots and air traffic controllers) came to light - which subjects deserve to be delivered to such a mixed audience and how to cope with the combined timetable issues.

A GROWING NUMBER OF COMBINED TRAINING INITIATIVES

A close look at the ATPL – 010 Certificate (Aviation Law) in comparison with the Eurocontrol ATCo Initial Training Common Core Content Specification shows significant similarities and areas in which combined interpretations lead to better "mutual understanding".

As far as Human Factors are concerned, beyond the Crew Resource Management and the Team Resource Management concepts which are now fully accepted and provide satisfaction to both technical areas, the objective is to put the focus on the Radiotelephony (R/T) communication issues (strengths and weaknesses of phraseology) and the difficulty for pilots and controllers to share situational awareness.

By concentrating on the initial training phase for both pilots and air traffic controllers, and taking full advantage of the unique ENAC configuration (integrated multiple professions and diverse student populations on the same campus), it seems ENAC may have at last found a way into the unexplored field of cross-culture training - one of the possible ways to tackle the challenges of the Next Generation Aviation Professionals.

As enhanced flight safety is definitely the objective of these new developments, combined case study workshops are also helping to improve the understanding that each one has a responsibility in terms of event reporting and experience sharing.

WHAT NEXT?

This ongoing process will soon lead to a number of new developments including additional case study videos, along with more combined training initiatives. One of these initiatives could be seen as a major breakthrough. For many years, ENAC has been an active member of a consortium driving aerospace research and development that enables simulator inter-connection. This technology opens the door to multiple possible applications, one being the simultaneous pilot and control simulation exercise.

Looking beyond the present experimental phase, one can easily imagine the potential of such applications, taking the "enhanced realism" of the exercises into consideration.

DELVING INTO AN UNEXPLORED FIELD OF CIVIL AVIATION TRAINING ... AT LAST!

These two populations (ATCo and ATPL) have developed over time following parallel tracks, with very little interaction to date. Despite the fact that each of these disciplines resides in specific technical environments, the overall safety and efficiency of air traffic relies, to a large extent, on the level of cooperation and mutual understanding between them.

Over the past few years, there have been several attempts involving qualified staff to bring these two areas of expertise together. But so far, the exercise has not demonstrated significant efficiency. Most of the time, optimized operational timetables and training budget restrictions have lead to isolated initiatives only.

By concentrating on the initial training phase for both pilots and air traffic controllers, and taking full advantage of the unique ENAC configuration (integrated multiple professions and diverse student populations on the same campus), it seems ENAC may have at last found a way into the unexplored field of cross-culture training - one of the possible ways to tackle the challenges of the Next Generation Aviation Professionals. ■

TURKISH AVIATION ACADEMY

Your Global Training Partner

- *EASA Approved Technical Trainings*
- *IATA Trainings*
- *Aviation English*
- *Flight Phobia Programme*

TURKISH AIRLINES | A STAR ALLIANCE MEMBER

www.thyaviationacademy.com
aviationacademy@thy.com

IATA Regional Training Center

IATA Authorised Training Center

European Aviation Safety Agency

TRAINAIR PLUS

AABI AND ICAO: COLLABORATING ON A GLOBAL STAGE

ABOUT CECI SHIRLEY

Ms. Ceci Shirley is the Accreditation and Meeting Services Manager for the Aviation Accreditation Board International. She has been with the non-profit organization for more than 10 years and was the 2008 recipient of AABI's President's Award. Prior to joining AABI, she was an account executive with a full service marketing and communications firm in Pennsylvania. In her role there, she handled over 40 accounts, which included universities, organizations and industrial corporations. She is a member of the National Scholars Honor Society.

AVIATION ACCREDITATION BOARD INTERNATIONAL AND ITS HISTORY

The development of AABI spans more than four decades. It began in 1970 when 287 institutions in the United States substantiated the necessity for consistent guidelines in aviation programmes. In the mid-1970s, the *College Aviation Accreditation Guidelines*, addressing associate and baccalaureate degree programme requirements, was created by the University Aviation Association (UAA). This marked the inception of a system for evaluating the quality of collegiate aviation education programmes.

The Aviation Accreditation Board International was established in October 1988, and was initially known as the Council on Aviation Accreditation (CAA). With the completion of Bylaws in 1992, CAA was chartered as a nonprofit corporation. The first board members and officers were elected in May of that year, and the first 14 programmes (at four institutions) were accredited.

Currently, AABI accredits 86 programmes at 33 institutions, with four programmes at four institutions in candidate status. Programme options include: aviation management, aviation maintenance, aviation electronics, aviation studies, flight education, aviation safety science and air traffic control.

In addition to providing a uniform basis for accreditation of collegiate aviation degree programmes, AABI is a major change agent for innovation and improvement in collegiate aviation education. AABI's founding principles require a balance of academic and industry collaboration to create a mutually beneficial interchange of ideas. The educational community, regulators, corporate, government, trade association members, practitioners and the public-at-large play a vital role in maintaining educational relevance and currency in a dynamic industry. All benefit from the resulting quality of graduating aviation professionals.

AABI's mission is to advance quality aviation education worldwide through leadership and the accreditation process. The goals of AABI are to stimulate collegiate aviation programme excellence and self-improvement, establish uniform minimum educational quality standards, and increase the credibility, integrity, and acceptance of collegiate aviation programmes within institutions of higher education and all aspects of the aviation community, including industry, government, and the public-at-large.

AABI GOVERNANCE

The original philosophy of Board representation was to maintain a balance of educators and representatives from industry. To achieve a cross-section of industry segments, aircraft manufacturers, airlines, labour and service personnel were recruited to serve. In 2002, recognizing the need for international representation, Board composition was revised, creating a new category to represent aviation interests outside of the United States.

Photo courtesy © Stan Alluisi

AABI members and meeting participants attending the ICAO presentations.

AABI maintains Board liaison positions for the United States and international government representatives. The purpose is to serve as a two-way communication link between AABI and governmental/regulatory agencies involved with programmes accredited by AABI. Currently, the Federal Aviation Administration (FAA), Transport Canada, and ICAO have liaisons serving on the Board.

Over the years, the AABI Board composition has grown; and today it is 46-members strong, representing the diverse interests of the global aviation community. One might logically ask, "Can a 46-member Board get business done efficiently?" The answer is a resounding "Yes!" Work is accomplished through Standing Management and Operating Committees, supported by ad hoc committees from the membership-at-large.

AABI AND ICAO

AABI recently held its Annual Meeting in Montréal, Canada, hosted by the International Civil Aviation Organization (ICAO). One full day was spent at this UN Specialized Agency headquarters with extensive participation by high ranking ICAO officials and provided for an opportunity to partner in new and innovative ways in order to address change in this dynamic industry.

The AABI Industry/Educator Forum/ICAO Symposium[1] included panels and presentations on the following topics:

- ICAO History and Processes
- Issues before ICAO's 12th Air Navigation Conference
- Flight Crew Qualification Rulemaking
- Proposed Educator Intern Programme
- Disparity between U.S. and ICAO First Officer Qualification Requirements.

Capt. Jim Dow, an ICAO Air Navigation Commissioner, delivered an informative presentation on ICAO's history and processes dating back to September 11, 1944, when the Chicago Convention took place. At that Convention, with 54 nations represented, the vote on the location of the headquarters was split between Canada and France. In 1946, Canada was selected to headquarter the Organization at an Assembly of the Provisional International Civil Aviation Organization (PICAO) held in Montréal. In this comprehensive overview of the organization, Dow also described the Annexes to the Convention (18), Procedures for Air Navigation Services (PANS) Training and the many ICAO manuals.

Mr. Richard Macfarlane, Chief, Integrated Infrastructure Management, ICAO, provided an overview of the issues the 12th Air Navigation Conference will tackle this year, including the realities of our systems today and developing tomorrow's aviation system. A global framework is needed to ensure safety is maintained and enhanced, ATM improvement programmes are harmonized, and barriers to future efficiency and environment gains are removed. All this must be accomplished at a reasonable cost.

The keynote address during the luncheon by Ms. Kerryn Macaulay, Australian Representative on the Council of ICAO, detailed what Australia is doing to meet the growing need for qualified aviation professionals. The keys to success are numerous, and parallel closely with ICAO's Next Generation of Aviation Professionals (NGAP) priorities, namely: partnerships between schools, tertiary institutions, industry and governments; improved standardization

and quality of training; and awareness initiatives and career path guidance, including greater emphasis on formally commencing the career path during the high school years.

Issues surrounding the Multi-crew Pilot License (MPL) were discussed two-fold: worldwide embrace of the license and an industry perspective. Mr. Carl Marquis, Technical Advisor to ICAO's Air Navigation Bureau, shared some urban legends on the MPL and described the differences in training approaches. Mr. Gary Morrison, representing CAE Oxford Aviation Academy, said, "The MPL is 'mission purposed' training." Rounding out this panel was an in-depth view of accreditation in Europe by Mr. William Agius from Zurich University of Applied Sciences.

The closing panel explored an innovative internship programme for professors, partnering airlines with educators for faculty to gain insight, industry perspective and knowledge to pass on to their students. The discussions included new ways aviation companies can facilitate this process, ultimately enhancing the learning benefit for students.

A major concern for airlines, flight schools, and universities with flight programmes, is an emerging divergence in requirements for airline First Officer qualifications between the U.S. and the international community as reflected in ICAO practices. The United States Congress passed a law that will require an ATP and 1,500 hours of flight time for First Officer qualification. This issue and strategies to address it were the topics of a Town Hall Meeting held during the AABI conference. The political and motivational aspects of a larger barrier to entry into a professional pilot career require concerted attention by the aviation community at large and AABI looks forward to addressing the problem through collaboration with ICAO and the NGAP initiative.

GLOBAL OUTREACH

In 2005, AABI's International Committee played a critical role in helping establish worldwide accreditation of aviation degree-granting programmes. The Standards (now referred to as Criteria) were revised to remove all specific references to the FAA, FARs and U.S.-specific names/terms, and replace them with "state-neutral" terms that facilitated accreditation in both U.S. and non-U.S. institutions. The first international aviation programmes were accredited in 2007, in Canada and South Korea.

Photo courtesy © Stan Alluisi

Capt. Jim Dow delivers a presentation on the history and processes of ICAO.

Photo courtesy © Stan Alluisi

Flags outside ICAO Headquarters.

Today, international outreach continues. Examples of those efforts include active participation on ICAO's NGAP Task Force. "I am honoured to have this opportunity to present information about AABI and the positive impact AABI accreditation can have on the education of the Next Generation of Aviation Professionals," said Dr. Thomas Carney, AABI past Chairperson and current NGAP Task Force Chair. "Our discipline needs well-prepared practitioners who have the educational and experiential foundation for life-long excellence and aspiration for leadership," he continued.

Clearly, we are at an unprecedented inflection point in aviation education worldwide. To meet the need for the NGAP, we must maintain the highest standards of education and training to attract the best and brightest students. The focus must be on the outcomes attained by graduates, and those outcomes must be current and relevant, and must provide the industry with the skills it needs for safe and efficient operations. Specialized accreditation through AABI can be a key in reaching these goals. The steps we take now to meet the challenges we face will have a pivotal impact on our continued success, and the long-term future of the worldwide industry we serve. ■

[1] The presentations can be found on the AABI website at: http://www.aabi.aero/news.html.

HIRING PILOTS DURING A SHORTAGE: SOME CAUTIONS

ABOUT DIANE DAMOS

Dr. Diane Damos has been involved in pilot selection for over 40 years. She was a professor of human factors for 19 years, teaching courses in aviation human factors and conducting research on pilot selection for both the U.S. Air Force and the Navy. In 1995 she founded Damos Aviation Services, Inc., a company specializing in pilot selection. She has worked as a consultant for many US air carriers and for carriers, training schools, and governments in Africa, the West Indies, and Asia. She has lectured and taught courses and seminars on pilot selection in Taiwan, South Africa, Spain, and Canada as well as in the United States. She has authored over 25 articles in scientific publications and 50 technical reports and proceedings articles on training and cognition as well as on selection. Dr. Damos has a Commercial Pilots Certificate with instrument and multi-engine ratings. She also holds the Instrument and Advanced Ground Instructor Certificates.

The international aviation community is experiencing a shortage of qualified pilots (Boeing Commercial Airplanes, 2012). Air carriers want to hire the most qualified pilots available, but the number of applicants may be so small that not enough pilots can be hired to meet the company's flying requirements. Air carriers can change their hiring process in a number of ways to deal with the shortage. Two types of changes are common and will be discussed in this article. Both of these changes result in the air carrier hiring more pilots. However, if the changes are implemented incorrectly, they can increase training costs and have other adverse impacts on training.

Before describing the changes and their effects, we should discuss two major parts of a pilot hiring process: the screening system and the selection system.

The purpose of the screening system is to identify those applicants with the required experience and education. Most carriers specify a minimum amount of flight time, a minimum number of years of education, and specific certifications. If an applicant meets all of the minimum requirements, he/she begins the selection process. If not, the applicant is given no further consideration.

The purpose of the selection system is to identify those applicants with the greatest amount of certain attributes, such as those with the highest level of spatial ability or those with the greatest flying skills (for more information see Damos, 2001; International Air Transport Association, 2010). A selection system usually consists of several selection instruments, such as standardized tests (professionally developed tests assessing abilities or personality traits), a simulator evaluation, and at least one interview. If an applicant passes all of the selection instruments, he/she is given a job offer and starts initial training.

The first type of change involves the screening system. Air carriers often reduce the required amount of a background variable to increase the number of applicants. For example, assume that an air carrier requires applicants to take courses in mathematics and physics during secondary school. Because of the pilot shortage, the carrier eliminates the requirement for these courses. In this example, the Training Department can compensate for this reduction in educational requirements by adding ground school classes covering the missing material. The initial costs associated with this change (the purchase of new training material, curriculum development expenses, and increased instructor salary and benefits) usually are foreseen by management. However, one long-term cost that often is unanticipated involves the increased footprint: the carrier must spend more on salary and/or stipends for the newly hired pilot before he/she becomes productive. A second unanticipated cost is that the new curriculum may not compensate perfectly for the lack of secondary-school courses. Some trainees may struggle and require more resources to complete initial training, increasing overall training costs.

As another example, assume that the air carrier reduces the total number of multi-engine hours required to apply. Such a change, again, should increase the number of applicants. If the Training Department is given adequate warning of this change, it can adjust the initial training curriculum by adding more ground school classes and/or increasing the number of training sessions in a flight training device. As in the previous example, the company will incur initial costs associated with the changed curriculum and long-term costs associated with the increased footprint.

The second type of change involves the selection system itself. In my experience, air carriers will lower the cutoff score on one or more of the standardized tests that assess abilities to increase the number of applicants who successfully complete the selection process. To understand the consequences of this type of change, it is necessary to discuss a little test theory. Professionally developed selection tests typically have scores that are normally distributed. Therefore, if hundreds of applicants took the test, their scores would be distributed as in Figure 1. A test is used in a selection system because those applicants who do well in training and in operational flying (good performers) have higher test scores on average than those who do poorly in training and operational flying (poor performers). Therefore, pilot applicants can be thought of as coming from two different normal distributions as shown in Figure 2.

Figure 1: A normal distribution of test scores

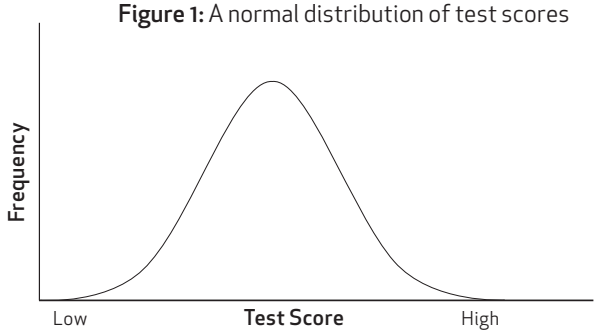
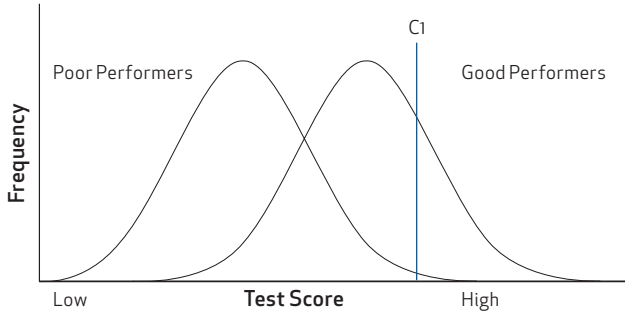


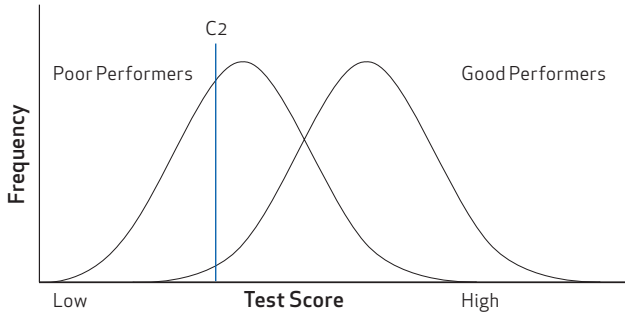
Figure 2: Distributions for applicants who do poorly in training versus those who do well in training. A high cutoff score, C1, is shown



For simplicity, assume that the air carrier only has one selection instrument, a standardized test assessing an ability, and that this instrument predicts performance in training. Assume that the cutoff score is set at C1 (see Figure 2). Everyone who scores at or above C1 will be given a job offer and accepted for training; everyone who scores below C1 will be rejected. C1 is a high cutoff score. Almost no applicants from the "Poor Performers" distribution get test scores at or above C1, and relatively few applicants from the "Good Performers" score at or above C1. Because the selection test predicts performance in training, almost everyone who scores above C1 will do well in training. However, because so few applicants score at or above C1, few applicants receive job offers and start training.

Assume that the carrier decides to lower the cutoff score on this selection instrument to C2 (See Figure 3). Nothing else in the selection process is changed. By lowering the cutoff, almost everyone from the "Good Performers" group will receive a job offer and begin training because almost all of this group will score at or above C2. This is exactly what the carrier wants: more pilots receiving job offers. However, more pilots from the "Poor Performers" group also will score at or above C2 and will receive a job offer and start training.

Figure 3: Distributions for applicants who do poorly in training versus those who do well in training. A low cutoff score, C2, is shown



By lowering the cutoff to C2, the air carrier increases its training costs significantly; the carrier may have to increase the number of instructors and buy additional training equipment, such as flight training devices, to accommodate the increased number of trainees. Again, these training costs are usually anticipated. In contrast, carriers rarely appreciate that a much higher percentage of the trainees will fail unless the training standards are lowered, which is unlikely. These failures result in wasted instructor time with its associated cost and increased idle time for flight training devices. Additionally, the pay and stipends given to the unsuccessful trainees are completely lost to the company.

Another cost associated with a lower cutoff is more subtle and often unforeseen by the company. The Training Department now must assume an "evaluation/selection" role in addition to its training role. Thus, it must be prepared to fail a larger percentage of trainees. Trainee evaluations may become more frequent and more standardized, and the progress of individual trainees may be

A pilot shortage will exist for the foreseeable future, and air carriers must adapt to this reality. The long-term solution to this problem is evident: interest large numbers of young people in an aviation career, preferably while they are in secondary school, and provide a clear career path for them.

scrutinized more carefully. Instructors may dislike the evaluation portion of their job and resist change. Additionally, many instructors think of themselves primarily as teachers, i.e., they feel that their job is to train students, not to fail them. Failing a trainee may be personally difficult for some instructors, and they may go to extreme lengths to help the student succeed, such as scheduling extra simulator sessions, providing special tutoring, allowing the student to retake exams, etc. These types of efforts waste more resources and further increase training costs.

A pilot shortage will exist for the foreseeable future, and air carriers must adapt to this reality. The long-term solution to this problem is evident: interest large numbers of young people in an aviation career, preferably while they are in secondary school, and provide a clear career path for them (See both Samarajeewa (2012) and Weissmuller (2012) for examples of this approach). The short-term solution involves changing the screening and selection systems in an informed manner. Human Resources and Training Departments should discuss the problems associated with changing either the selection or the screening process, and the Training Department should be given sufficient time and resources to make the appropriate adjustments to the training curriculum. Both groups should be aware that not all impacts can be foreseen and that good communications are essential to a smooth transition and dealing effectively with unanticipated impacts of changes. ■

References

Boeing Commercial Airplanes. (2012). Current Market Outlook 2012-2031. Seattle, Washington.

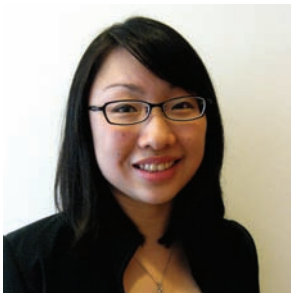
Damos, Diane L. (2001). Aiming for selection perfection. *CAT*, 25-28.

International Air Transport Association. (2010). Guidance material and best practices for pilot aptitude testing. Montreal, Canada: International Air Transport Association.

Samarajewa, Dev Kowsala. (2012). Inspiring the next generation of flyers. *ICAO Training Report*, 2(1), 20-22.

Weissmueller, Johnny. (2012). Nuturing tomorrow's pilots. *ICAO Training Report*, 2(1), 14-16.

MANPOWER STRATEGIES FOR TOMORROW'S AVIATION WORKFORCE



ABOUT ANGELA NG KWEE YUE
Ms Angela Ng leads the Industry Manpower Development team at the Civil Aviation Authority of Singapore (CAAS). Her team develops manpower development initiatives and activities to support Singapore's aviation industry and works with local and international training institutions to enhance the scope and quality of aviation training in Singapore. She has more than 8 years of experience in industry and manpower development, with over 5 years spent in the aerospace engineering and maintenance sector. She has been involved in the development of a national adult Continuing Education and Training (CET) framework for the aerospace MRO industry, working with aerospace companies to establish structured CET infrastructure and programmes in-house and with reputable training organizations. She has worked in government, private, as well as non-profit organizations, which have developed her varied and diverse perspective on the aviation industry manpower landscape. She is also currently a member of the ICAO Outreach Sub-Committee, supporting the ICAO NGAP programme.

Singapore is today a major aviation hub, with one of the world's most awarded airports, a strong aviation safety record, an established centre for aviation training and a comprehensive aerospace industry. We aim to move Singapore aviation to the next level, and one of the challenges we need to address is manpower. With projected unprecedented growth in the Asia-Pacific region in the next 20 years, how can Singapore continue to support its growing aviation hub with the manpower and talent required?

The Civil Aviation Authority of Singapore (CAAS) shares its perspectives and how Singapore is addressing this issue with a fresh take on regulations, training and outreach.

The backbone of every industry is its workforce. The aviation industry is driven by skilled manpower, which is key to its success. It is thus critical that the workforce has its share of people and talent, and is constantly up-skilled.

ICAO has projected that, from now to 2030, the pilot population must more than double to over one million. In the Asia-Pacific region, the anticipated growth is almost 6-fold. For maintenance personnel, the situation is similarly pressing, with annual global demand of some 70,000. However, at the same time, there is an alarming annual training capacity shortage for maintenance personnel of over 18,000 . It was with the scenario of a significant shortfall in aviation professionals in mind that ICAO launched the Next Generation of Aviation Professionals (NGAP) initiative in 2008.

UNDERSTANDING THE CHALLENGES

As noted by the NGAP Taskforce, key to addressing the problem is having reliable data. Since 2009, CAAS has sought to better understand the situation on the ground, and the real issues the industry faces. CAAS has invested in several manpower consultancy studies, in partnership with industry bodies and trade associations, investigating issues such as manpower demand and supply over the next 10-20 years, and training trends and capacities. The studies have revealed important themes unique to Singapore.

Theme 1: Training capacity is not a problem

Singapore lacks natural resources and our main competitive advantage has always been our people. Over the years, we have built a robust education and training infrastructure to support the growth of industry sectors, including aviation.

Hence, in spite of the lack of aviation training capacity globally, this problem is not apparent in Singapore. The specialization opportunities at tertiary schools are also varied, covering areas such as civil aviation management, aerospace

CAAi
Above and beyond

Aviation training from practising professionals

CAAi is a leading, globally recognised aviation consultancy company that delivers and promotes best practice in aviation governance and education.

Our dedicated training consultancy is globally recognised as a market leader in professional aviation training. We offer a comprehensive portfolio of public access courses and tailored training programmes designed to cover all aspects of aviation safety. Our training services are based on ICAO Standards and Recommended Practices (as a minimum), with the key objective of providing the highest levels of competency that delivers results for individuals and organisations.

Our areas of specialisation:

- Safety and Risk Management
- Airports, Air Traffic and Airspace
- Design Production and Maintenance
- Regulation Compliance and Monitoring
- Defence
- Learning and Development

To find out more about our training courses, please visit our website
www.caainternational.com/courses

CAA International Limited Aviation House Gatwick Airport South West Sussex RH6 0YR United Kingdom
T +44 (0) 1293 768700 F +44 (0) 1293 573992 E training@caainternational.com **www.caainternational.com**
A wholly owned subsidiary of the UK CAA

engineering, aerospace manufacturing and more. This offers students more opportunities to gain valuable grounding in targeted segments of the aviation industry.

Theme 2: It's not just a numbers game
Singapore's unemployment rate currently stands at around 2%. Hence, competition for manpower amongst the various growth sectors is keen. Job-seekers have many choices, and there is high manpower mobility in the competitive hiring market.

The implications of this are significant. Even as we train youth for aviation professions, the numbers flowing into the industry may be smaller. Our studies show that the majority of the annual graduating class of students in aerospace engineering choose other fields of work due to personal interests and aspirations. Ensuring sufficient manpower for the industry is therefore not just a numbers game, but also an understanding of what drives and motivates young individuals in their career choices.

Theme 3: Building and sustaining interest
While recruitment efforts and initiatives to encourage fresh graduates to join the aviation industry have been in place for a long time, there had been less effort to engage youth and the general public to promote aviation and its careers.

ABOUT THE CIVIL AVIATION AUTHORITY OF SINGAPORE (CAAS)

The mission of the Civil Aviation Authority of Singapore (CAAS) is to "Grow a safe, vibrant air hub and civil aviation system, making a key contribution to Singapore's success". CAAS' roles are to oversee and promote safety in the aviation industry, develop the air hub and aviation industry, provide air navigation services, develop Singapore as a centre for aviation knowledge and training, and contribute to the development of international aviation.

However, children develop aspirations and dreams at a young age. Youth outreach is therefore a clear imperative in our manpower development strategy, to instil passion for aviation among our young. The key is in rallying the industry to work on this long-term strategy with us, even as the benefits may only be realised in the long-term.

STAYING AHEAD OF THE GAME

As we understand the challenges more, it is clear to us that the old ways of doing things are not sustainable. There is a real

need to change how we regulate and train future aviation professionals. We have to transform the manpower development and training landscape in Singapore.

Balancing regulation and skills recognition
This year, CAAS reviewed its policy for licensing of aircraft maintenance engineers to reduce barriers to entry for young people. An apprentice licensed aircraft engineer must undergo at least four years of training even after graduation from a relevant tertiary-level aerospace course. This long apprenticeship period has deterred young students seeking a career in aerospace engineering. Following its review, CAAS provided guidance to enable tertiary institutions with aerospace related courses to seek Maintenance Training Organization approval by CAAS based on their training curriculum. For graduates of these courses, their apprenticeship is reduced by up to one year.

Such reviews are an indelible part of our progressive regulatory regime, where we consult and engage the industry and stakeholders in our continued bid to develop regulations which support a future-ready industry, yet safeguard aviation safety.

Competency-based training: A paradigm shift
The buzzword among the aviation training community now is "competency". Competency-based training (CBT) and assessment is proving to be the way forward. However, the transition from traditional time-based training to competency and evidence-based training and assessment is not straightforward. It goes beyond changes in infrastructure and curriculum to a fundamental change in the mindset of instructors, assessors, employers and trainees alike.

In recognition of this trend, Singapore has actively invested resources to support industry adoption of competency-based training, while addressing its impact on personnel licensing regulations and safety. The first fruits have already been seen in our adoption of the Multi-crew Pilot License (MPL) initiative introduced by ICAO as a role-purpose license, training pilots directly for co-pilot duties in an airline environment. Singapore implemented the MPL in a 2011 trial and we expect to see greater take-up of MPL in the coming years.

Harnessing the right mix of training tools
CAAS' training arm, the Singapore Aviation Academy (SAA), is reconfiguring its programmes in line with the NGAP mandate. The goal is to achieve greater programme standardization in accordance with a competency-based framework, yielding globally recognised certifications. Accompanying this would be a rigorous assessment of trainees' proficiency, and enhanced quality control over training delivery to validate each programme's effectiveness. Recently, SAA developed a Standardized Training Package (STP) for Aeronautical Search and Rescue Operations, thereby becoming one of the first training organizations to achieve the ICAO TRAINAIR *PLUS* full membership.

SAA is also moving into research on instructional techniques and methodologies. In September 2012, SAA commissioned the latest Long Range Radar and Display (LORADS) III ATC training simulator, which incorporates the latest technologies and innovative features, including the ability to replicate the typical human-machine interaction in a live ATC environment. SAA is now exploring how training using simulators can be better integrated with e-learning, game-based learning, mobile learning and even social media tools to maximise knowledge and skills uptake and enable students to move seamlessly into real-life operating environments.

Reaching out
CAAS has become a strong advocate for youth outreach on aviation nationally. We have developed a number of incentive programmes to encourage the involvement of industry and learning institutions in promoting aviation and its careers. These activities range from a career talk series and industry visits to industry promotion fairs drawing thousands of participants. We are heartened by the strong response from students and schools to our programmes. We are looking to build "homes" for aviation in our educational institutions through dedicated aviation themed learning facilities and student clubs.

TAPPING NEW OPPORTUNITIES

Beyond these progressive steps to ensure our continued relevance to industry and our stakeholders, CAAS has also established some long-term plans to enhance our value proposition as an aviation hub. These projects look to further horizons and ensure our continued hub competitiveness, with a key component being that of how such research and technology projects can continually enhance the expertise and value of our Singapore aviation workforce.

Singapore lacks natural resources and our main competitive advantage has always been our people. Over the years, we have built a robust education and training infrastructure to support the growth of industry sectors, including aviation.

Building a Centre of Excellence for Air Traffic Management (ATM)
In September 2012, CAAS launched a plan to establish Singapore as a Centre of Excellence for ATM, with a S$200 million (approx. US$160 million) seed fund. The aim is to build a vibrant and self-sustaining ecosystem for ATM in Singapore, comprising research institutes, industry players, academia, and other stakeholders. The ecosystem will generate ATM knowledge and expertise, and develop concepts, technologies and solutions to meet the unique requirements of Singapore and the Asia Pacific region.

Integral to this plan is the establishment of research institutes and think tanks. Besides carrying out research and development, these establishments will be involved in the nurturing and grooming of ATM talent and experts, ensuring a continuous pipeline of high-calibre ATM human capital to support the work of the ATM ecosystem. These establishments will also support their respective Institutes of Higher Learning (IHLs) to provide education and training for the build-up of a highly competent and capable ATM workforce.

An aviation schoolhouse
Beyond ATM, CAAS also envisions Singapore becoming a Centre of Excellence for aviation knowledge and human resource development.

In recent years, reputable universities such as Embry-Riddle Aeronautical University and Cranfield University have established programmes with SAA and local IHLs in Singapore. Embry-Riddle has also opened their Asia Headquarters in Singapore. IATA has collaborated successfully with the Nanyang Technological University (NTU) in Singapore to deliver an integrated IATA-Nanyang Advanced Management Programme (AMP) to develop leaders in the aviation industry. In addition, SAA has launched a new advanced management programme in civil aviation with INSEAD, aimed at providing aviation professionals with broad, cross-functional executive training to prepare them for leadership positions in the industry.

THE PROVERBIAL ONION

Human resource development continues to evolve in our dynamic industry landscape and economic environment. We continue to peel off layers of this proverbial onion, learn from our experiences and adjust our strategies to respond to new discoveries. CAAS takes a long-term approach in the development of human capital, keenly aware of the critical role that manpower plays as we strive to grow a safe and vibrant air hub and civil aviation system that contributes to Singapore's success.

ICAO's NGAP movement has been pivotal in our efforts, as we look beyond our shores for solutions and ideas, and stay motivated knowing that the international aviation community is moving forward together in building tomorrow's aviation workforce. ■

[1] ICAO Doc 9956 Global and Regional 20-year Forecasts / 2010-2030

AIRPORTS COUNCIL INTERNATIONAL

ACI GLOBAL TRAINING

Reach your highest potential

www.aci.aero/training

INTERNATIONAL FEDERATION OF AIR TRAFFIC SAFETY ELECTRONICS ASSOCIATIONS

The global voice of Air Traffic Safety Electronics Personnel

An interview with Thorsten Wehe, Director, Europe Region, International Federation of Air Traffic Safety Electronics Associations (IFATSEA)

ABOUT THORSTEN WEHE
M. Thorsten Wehe is currently the IFATSEA Director for Europe. He is a member of the ICAO NGAP Task Force, a member of the Rulemaking group in EASA and an ATSEP engineer at the Bremen Air Control Centre.

ICAO TRAINING REPORT: WHO IS IFATSEA AND WHAT IS THEIR RELATIONSHIP WITH ICAO AND WITH THE NEXT GENERATION OF AVIATION PROFESSIONALS (NGAP) PROGRAMME?

Thorsten Wehe: IFATSEA is the International Federation of Air Traffic Safety Electronics Associations. Founded in 1972, it has a long history in modernizing CNS/ATM programmes. IFATSEA represents more than 20,000 Air Traffic Safety Electronics Personnel (ATSEP) from over 60 ICAO contracting States worldwide.

IFATSEA promotes high standards of competency and the appropriate use of technology as a means of achieving a safe, secure and efficient air navigation system. IFATSEA has been involved in ICAO's NGAP Programme since the beginning and is a strong supporter of the initiative. As an active member of the ATM sub-group, IFATSEA is committed to providing a draft chapter for ATSEPs to ICAO to eventually be included in the revised ICAO Document 9868: *Procedures for Air Navigation Services: Training (PANS-TRG)*. It is imperative that core competencies for ATSEPs be harmonized worldwide.

CAN YOU DESCRIBE THE ROLE OF AN ATSEP?

Air Traffic Safety Electronics Personnel (ATSEPs) are the Air Navigation Services Engineering and Technical Electronic Professionals who operate and maintain operational air navigation systems and networks that affect the integrity of the information at an Air Traffic Controller`s workstation or the integrity of the information received by a pilot and other stakeholders. ATSEPs are usually employed by air navigation service providers.

WHAT WAS IFATSEA'S ROLE IN THE DEVELOPMENT OF THE ICAO DOC. 7192 *TRAINING MANUAL*?

Part E-2 of Doc. 7192 is largely based on a document developed by IFATSEA. It was born of an exchange between members of the ICAO Air Navigation Commission, the ICAO Secretariat and Members of the IFATSEA during the 30th IFATSEA Assembly in Montreal (2000), which highlighted the fact that the personnel involved in the maintenance and installation of CNS/ATM systems were trained to various standards.

Some States had implemented a comprehensive programme of training, certification and, in some cases, of licensing, while other States were still looking for appropriate guidance. There was, at that time, a lack of universally established principles to govern the training and development of ATSEPs. Subsequently, the 11th Air Navigation Conference that was held at ICAO Headquarters in September 2003 expressed the

view that the needs related to training, qualification and competency of air traffic safety electronics personnel required further investigation.

Since air navigation systems are globally interconnected, IFATSEA believes personnel involved in the maintenance and installation of CNS/ATM systems should be trained to uniform requirements worldwide. In support of this, ICAO decided to develop a new Part to Doc. 7192 that would address the training requirements for this technical group of personnel that is recognized as the Air Traffic Safety Electronics Personnel. The ATSEP Training Manual was developed to globally harmonize standards for ATSEP training.

CAN YOU GIVE EXAMPLES AS TO HOW THE ROLES OF ATSEPS WILL CHANGE WITH NEW TECHNOLOGIES SUCH AS CARATS, NEXTGEN AND SESAR?

Regional projects like the Collaborative Actions for Renovation of Air Traffic Systems (CARATS), Next Generation Air Transportation System (NextGen) and the Single European Sky ATM Research (SESAR) are platforms for research and development to create future ATM Systems. ATSEPs have critical responsibilities to ensure the interoperability, accuracy, integrity and reliability of ANS systems. Future ANS systems will increase the responsibilities of ATSEPs through enhanced management of real time operational systems and the implementation of System Monitoring and Control functions of new and existing systems like System Wide Information Management (SWIM). ANSP's systems must work together and so must the engineers and technologists responsible for their integrity.

A modern ATM system is a complex multi-layered system, where humans, tools, machines and equipment all work in harmony using well adapted and fine-tuned procedures to control and operate the air traffic in a given airspace or region safely. It is of great importance that a well-balanced approach is chosen for the implementation of such automation, and it must be ascertained that all components of the ATM system are getting the required degree of attention and care. ATSEPs ensure that add-ons brought into the system by automation are not weakening, or even unsettling the basic pillars.

ATSEPs already constitute a trained, tested, and certified workforce and will continue to provide maintenance and technical operation of future ANS systems. With their knowledge of current systems, ATSEPs are best qualified to transition to new systems without adversely impacting the integrity or reliability of existing systems. They can spot compatibility issues prior to the new equipment being brought online. They can respond correctly and safely if it becomes necessary to immediately transition from a new system to a legacy system.

HOW WILL THE NEXT GENERATION OF ATSEPS BE IMPACTED?

Two factors will impact the next generation of ATSEPs. First, more electronics and networks will be required to respond to the growing demands of air traffic. This means more knowledge and responsibilities for the ATSEPs and a front row ticket in the ANS safety chain. Secondly, systems are going "global". Without proper competency standards, an unbalanced skill set will be created among stakeholders and an unpredictable outcome for the performance of the systems as a whole. The ATSEP's role will include an unprecedented global awareness.

IFATSEA promotes high standards of competency and the appropriate use of technology as a means of achieving a safe, secure and efficient air navigation system.

DO WE NEED TO TRAIN THE NEXT GENERATION DIFFERENTLY?

The human element must always be part of the ATM/CNS equation. Experience is as important as knowledge when making decisions or performing activities that may affect ATM/CNS system integrity. In order to achieve global harmonization, more standards must be developed for addressing ATSEP training, competency and licensing when applicable. An adapted training framework is required. Aviation stakeholders can no longer act, as before, in isolation. Systems will be inter-connected across the world, so the training requirements should also be harmonized on a global level. Training objectives will also need to reflect this new reality.

WHAT IS THE VIEW OF IFATSEA ON THE AVIATION SYSTEM BLOCK UPGRADES (ASBUs)?

ASBUs are milestones for the modernisation of air navigation. They set a timeframe for the implementation of a new era in aviation. From the IFATSEA perspective, it is essential that performance, procedures and new systems deployment be addressed in those blocks, but we feel that the next generation of aviation professionals issue should also be considered (pilots, ATCOs and ATSEPs). Without them, aviation does not exist.

Now and for the foreseeable future, the air traffic controller, air traffic safety electronics personnel, assistant, pilot and other operational roles will be pivotal in the transition for a successful implementation of new technology. IFATSEA offers its full support to ICAO and all stakeholders to harmonize CNS and ATM into a globally integrated air navigation system. IFATSEA and its ATSEPs are committed to delivering and managing a safe, secure and efficient worldwide ANS technical infrastructure for the benefit of the whole aviation community and travellers in general. ■

TRAINAIR *PLUS*:

1st Global Symposium emphasizes partnership to address change

The TRAINAIR *PLUS* Global Symposium held in Singapore from 25 to 28 September 2012 highlighted the necessity for key stakeholders from the training community, as well as members of the TRAINAIR *PLUS* Programme, to develop and nurture partnerships amongst each other.

Photo courtesy of © Ministry of Transport Singapore

The first Symposium of the revamped TRAINAIR *PLUS* Programme, hosted by the Civil Aviation Authority of Singapore (CAAS) and the Singapore Aviation Academy (SAA), convened members to meet and discuss past, current and future developments of the programme. The event also served as a forum to allow members to share challenges facing the global aviation training community, as well as exchange experiences, vision, best practices and keys to success.

DEVELOPING PARTNERSHIPS: A PRIORITY FOR MEMBERS OF THE TRAINAIR *PLUS* PROGRAMME

TRAINAIR *PLUS* Associate and Full Members provided presentations describing their respective training centres and outlining their purpose for joining the TRAINAIR *PLUS* Programme. The goal of developing and solidifying partnerships through the TRAINAIR *PLUS* Programme was a recurrent theme. The following sampling of presentations revealed the broad variety of backgrounds and goals:

- In Africa, L'Ecole Régionale de Sécurité Incendie (ERSI) in Cameroon, a training arm of L'Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar (ASECNA), an organization comprising 17 African States, joined the programme to develop and strengthen a network of regional and international partnerships for the benefit of aviation structures in ASECNA member States.
- From North America, Canada's Aviation Strategies International (ASI) intends to contribute to the maturing of the TRAINAIR *PLUS* network through ongoing research and communication of best practices and their application in the field, in addition to promoting training as a performance enabler.
- The Chief Human Resource Officer of the GMR Aviation Academy, based in Hyderabad, India, expressed the conviction that the standardized course development methodology, as well as the sharing of Standardized Training Packages (STPs) with other Member Centres would further his organization's aspirations to become a centre of excellence for course content development.
- From Europe, Sweden's Entry Point North saw the programme as an opportunity to explore and develop partnerships in Asia, the Middle East and Africa, which represents a new market for their training services.
- In the Gulf Region, the Gulf Centre for Aviation Studies (GCAS) summarized the spirit of the TRAINAIR *PLUS* Programme best: "GCAS's aim is not to compete with other training institutions, but rather to create a culture of cooperation and sharing of knowledge, expertise and resources."

PARTNERING TO ADDRESS KEY CHALLENGES

The Symposium featured panel discussions and workshops in a number of important areas of aviation, with a view to shaping and promoting best practices for aviation training. Strong emphasis was placed on building partnerships and working together to address some of the key challenges that the industry faces:

- How do we finance training in the future?
- How can we gauge the effectiveness of training (return on investment)?
- How do we interest students in aviation?
- How can we bridge the divide between different generations?
- How can we best achieve "buy-in" from management on the importance of training?

The participants agreed that the industry should employ tools such as e-learning and blended learning to deal more effectively with the time and financial constraints of today's learning environments. The aviation training industry must follow the digital roadmap in a digital world.

Competency-based training and cross-training between different professions were viewed as significant contributors to upgrading the quality of training received and dealing with the intertwined nature of work processes and procedures.

TRAINAIR *PLUS* Steering Committee Meeting

Building a solid platform for training efforts anchored by the competency-based model and undertaking a comprehensive re-evaluation of training systems and tools from the competency-based perspective will allow training institutions to more effectively deal with both the quality of training provided and the competency of the trainees these institutions introduce into the workforce.

Finally, there was a strong feeling among participants of a need to change the perception in some circles of training as a waste of money by clearly linking quality of training to its effects on business costs. What is the cost of doing nothing or relegating training to doing the minimum to meet regulatory requirements? Training must be clearly perceived as being directly linked to safety and the consequent negative impact on return on investment. Knowing the price of an incident or accident will make it easier to justify the investment in quality training.

TRAINAIR *PLUS* TWO YEARS LATER

During the Symposium, ICAO called the first meeting of the newly formed TRAINAIR *PLUS* Steering Committee in order to review the progress of the programme and to receive input on how TRAINAIR *PLUS* should develop its operations going forward. The Steering Committee is tasked with ensuring that the programme meets member needs; developing the programme over time by providing a long-term vision and recommending improvements; and planning the expansion of the membership network. To date, nine training institutions have achieved full membership and 30 institutions have become Associate Members. Ten STPs have been validated and 20 additional STPs are in development.

Central to the TRAINAIR *PLUS* competency-based methodology is the training of course developers through the TPP Training Developers Courses (TDCs) hosted throughout the world by Member training centres and conducted currently in English, French and Spanish. In 2012, sixteen such courses were held, effectively training some 246 course developers to TRAINAIR *PLUS* standards. The programme will conduct approximately 12 TDCs per year in order to extend the pool of course developers who have the capacity to develop STP's using TPP course development methodology, as outlined in ICAO Doc 9941: *Training Development Guide*.

In terms of future development, the TPP programme intends to conduct 20 assessments of training facilities per year through 2013 and 2014 to bring the network of members to some 80 organizations.

The TRAINAIR *PLUS* Programme anticipates that 75 fully validated STPs will be available to members through the automated TRAINAIR *PLUS* electronic Management System (TPeMS) by December 2014. The first phase of this comprehensive electronic sharing system was validated by members in spring, 2012 and went live in August.

THE NEED FOR THE TRAINING COMMUNITY TO ENGAGE INDUSTRY

Developing a profile of the aviation professional of the future was identified during the Symposium as one of the most important challenges facing the training community. A key question raised was how ongoing developments in the aviation industry will affect the profile of the typical professional who will want to choose aviation as a career.

According to Diego Martinez, Manager of the TRAINAIR *PLUS* Programme, training centres cannot accomplish this task in isolation. "We need to develop partnerships with the industry. Who is better qualified to identify the trends, changes and challenges we face than those who are investing in the future of the industry – manufacturers, technological innovators, academics – those who are deeply involved in research and development. To maintain and update our training skills in the face of rapidly changing technology, we should cast an eye to the future. Corporations who are leading the pace of technological change can provide us with this visibility."

What will air traffic control, engine maintenance or airport automation look like in the future and how will it affect the competencies of the professionals we must train? What special tools will training centres need to prepare professionals for the increasingly complex jobs they must perform? The role of the industry is paramount and can help the training community.

Although the task may, at first glance, seem insurmountable, developing partnerships between the industry and training centres or between the more advanced training centres and their smaller and newer counterparts is essential in order to address change in the training field. ■

TRAINAIR *PLUS*

CONGRATULATIONS TO THE FOLLOWING AVIATION TRAINING CENTRES THAT JOINED THE **TRAINAIR *PLUS*** PROGRAMME*.

North America / Central America The Caribbean

Canada
The ASI Institute, A Division of Aviation Strategies International

Central America
Instituto Centroamericano de Capacitación Aeronautica (ICCAE) de COCESNA

Cuba
Centro de Adiestramiento de la Aviación (CAA)**

Dominican Republic
Academia Superior de Ciencias Aeronáuticas (ASCA)**

Jamaica
Civil Aviation Authority Training Institute (CAATI)

Mexico
Centro Internacional de Instrucción de Aeropuertos y Servicios Auxiliares (CIIASA)**

Europe

France
Centre Français de Formation des Pompiers d'Aéroport (C2FPA)

Romania
Romanian Aviation Academy (RAA)

Russia
CompLang Aviation Training Centre

Spain
Servicios y Estudios para la Navegación Aérea y la Seguridad Aeronáutica (SENASA)

Sweden
Entry Point North (EPN)

The Netherlands
Joint Aviation Authorities Training Organization (JAATO)**

Turkey
Turkish Airlines

United Kingdom
NATS Training and Simulation

Middle East / Asia

India
Civil Aviation Training Centre Allahabad

GMR Aviation Academy

Indonesia
Air Transport Human Resources Development Centre (ATHRDC)

Iran
Civil Aviation Training Centre of Iran (CATC)

Japan
Aeronautical Safety College (ASC)

Jordan
Queen Noor Civil Aviation Technical College (QNCATC)

Nepal
Civil Aviation Academy (CAA) of Nepal

Qatar
Qatar Aeronautical College (QAC)

Republic of Korea
Incheon Airport Aviation Academy (IAAA)**

Singapore
Singapore Aviation Academy (SAA)**

Thailand
Civil Aviation Training Centre of Thailand (CATC)

United Arab Emirates
Gulf Centre for Aviation Studies (GCAS)**

South America

Brazil
Agência Nacional de Aviação Civil (ANAC)

Instituto de Controle do Espaço Aéreo (ICEA)

Ecuador
Escuela Técnica de Aviación Civil (ETAC)

Peru
Centro de Instrucción de Aviación Civil (CIAC) de CORPAC

Africa

Cameroun
École Régionale de Sécurité Incendie (ERSI)

Kenya
East Africa School for Aviation (EASA)**

Morocco
L'Académie Internationale Mohamed VI de l'Aviation Civile (AIAC)

Niger
École Africaine de la Météorologie et de l'Aviation Civile (EAMAC)**

Nigeria
Nigerian College of Aviation Technology (NCAT)

Sénégal
École Régionale de la Navigation Aérienne et du Management (ERNAM)

South Africa
Air Traffic and Navigation Services Limited- Aviation Training Academy

Sudan
Civil Aviation National Training Institute (CANTI)

www.icao.int/trainairplus

* As of September 2012 ** **TRAINAIR *PLUS*** Full Members

CENTRAL AMERICAN SUCCESS

ACSA PROVES THAT COOPERATION IS THE KEY TO SUCCESS

ABOUT MARIO CHACÓN

Mario joined ACSA as an airworthiness consultant in 2000 and became an expert in Operational Safety after being involved in several State audits and conducting training of State experts. With over 12 years experience in international technical assistance and strong experience with ICAO and FAA audits, Mario became ACSA ' s Deputy Director in 2009. Prior to joining ACSA, Mario was an aircraft maintenance manager for the largest airline and maintenance organization in Central America, working in the industry for 30 years.

ABOUT CATALINA M. ALVAREZ

Catalina Murillo started in the aviation field as a cabin crew member in 1993. She has been working in COCESNA/ACSA since 2003, especially in the development and implementation of the regional regulatory framework and guidance materials. She has also been working and assisting the COCESNA Member States during International Organizations Audits and categorization processes.

ABOUT CAPT. RODRIGO BRENES

Capt. Brenes began his career in 1982, flying for the Costa Rican Government in the Police Air Section, Ministry of Public Security. His participation in civil aviation regulatory activities started in the year 2001 working for ACSA where he became an Operations and Regulations Officer. He was appointed Safety Manager for the Agency in Central America, responsible of restructuring and managing the new ICAO changes in safety matters in 2007. Since 2010, Capt. Brenes has conducted several safety management training courses for States and service providers worldwide and presently, is the safety coordinator for ACSA.

Safety oversight is the responsibility of all States and is defined as a function by which States ensure effective implementation of ICAO Standards and Recommended Practices (SARPs). As a result, and in order to achieve operational safety goals, the oversight of service providers and the airline certification process constitute a large portion of the core functions of a State's Civil Aviation Authority (CAA). These core functions are part of a continuous cycle of supervision and require significant financial and human resources in order to meet ICAO obligations.

As it is difficult for many States to have the necessary resources to implement ICAO SARPs, some States have identified a means to work together to achieve their goals through a regional approach. In 2000, the States of Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua) agreed to work together to meet their ICAO obligations through the creation of the Agencia Centroamericana para la Seguridad Aeronáutica (ACSA), which was formed under the governing body of the Corporación Centroamericana de Servicios de Navegación Aérea Organismo Internacional de Integración Centroamericana (COCESNA).

WORKING TOGETHER

Coming together and working on a regional level demands strong political will and cooperation. This is especially important for a dynamic industry like aviation, where it is necessary to constantly monitor changes such as the market's growth or decline. For ACSA, the identification and understanding of these changes have enabled it to focus support on its Member States. This is important for developing and running an effective Regional Safety Oversight Organization (RSOO).

In order for States to work together to meet their international obligations, it became evident that there were two key elements that needed to be established in order for ACSA to be effective:

- establishment of common rules and procedures; and
- acquisition and retention of qualified technical personnel.

Juan Santamaria International Airport, Alajuela City, Costa Rica.

One of ACSA's commitments in the region is the coordination and development of common rules in compliance with international standards, which is a key element in the establishment of an RSOO. These rules are necessary for aviation safety, security, efficiency, reliability, and environmental protection.

Standardization and mutual recognition of these standards are critical for the Central American region. This was echoed by the largest airlines operating in the region under joint venture agreements, which demanded regional rules in order to promote more effective and efficient service from the CAAs in the region. Therefore, achieving this goal became central to the objectives that ACSA set for itself.

Through the regional approach, ACSA also focused on establishing an organization composed of qualified technical personnel from the different member States in the region. As part of this process, ACSA realized that no goal could be attained without training. As a result, a training programme was established which not only included ACSA's technical personnel, but the inspectorate staff from the region's CAAs, thus enabling the dissemination of the joint rules and procedures developed by ACSA. Using the same rules and procedures to train technical personnel allowed the surveillance and certification process to be conducted regionally under the same standards.

Rules and procedures development is a continuous action that is managed by ACSA for Member States. These actions, coupled with a staff of qualified technical personnel are essential to ensuring that the RSOO is complying with ICAO SARPs. The challenge ACSA has had to address over the years is the integration and active participation of experts from Member States in the rule-making process, including training, in order to harmonize and standardize the implementation of these rules.

THE VALUE OF JOINT RULE-MAKING

It is important for an RSOO to enlist the commitment and support of Member States during the rule-making process. In ACSA's case, this process is based on a regional procedure which allows the system to gather States' specific requirements and different points of view, in order to reach consensus on these documents. This allows ACSA to tailor the rules to the satisfaction of its customers: the States and the industry, as well as to facilitate application of the rules.

Joint rule-making is a cost- and resource-efficient activity. It allows States to have controlled development of rules and procedures, and their implementation. Also, by establishing these common rules, it provides the foundation for States to have qualified and updated technical personnel who are trained to the same level to carry out safety oversight activities and permits States to maintain and improve their safety records in compliance with international standards.

WHY IS IT IMPORTANT TO TRAIN EXPERTS IN REGIONAL RULES?

Today, it is important that civil aviation experts and the aeronautical community understand the regulations and the associated guidance material in order to have a common interpretation of them. Through rules and procedures training, States can harmonize their application and the industry need not encounter differences in the interpretation of these rules.

Receiving more effective training will improve the competencies and professionalism of the technical inspectorate. This improvement will directly influence State safety oversight capabilities.

SAFETY IMPROVEMENTS IN THE REGION

For various reasons, safety improvements made prior to the implementation of the Universal Safety Oversight Audit Programme (USOAP) were considered a difficult task for some States. The Central American States were able to overcome these difficulties with the creation of ACSA. Under ACSA, several projects were launched, which generated a positive influence among commercial air operators and CAAs in the region.

Projects such as the creation and implementation of harmonized regional regulations, complemented with on-the-job training (OJT) for the regulators are important achievements. The road to safety is being improved in the region through projects such as this, and the implementation of a safety road map aligned with the ICAO Global Aviation Safety Plan (GASP) is paving the way for ACSA.

Additionally, ACSA has optimized the use of human and financial resources through economies of scale by making a pool of experts readily available. This optimization of resources has had a positive impact on operational safety by allocating resources more efficiently. These positive results are evident when reviewing the USOAP results of States in

ACSA Personnel in front of new building which was inaugrated in April 2011.

Central America. The safety oversight system of Member States has been strengthened and ACSA has helped maintain these high standards by offering the Member States an efficient way to perform their duties.

Mutual recognition has been achieved due to the approval of the Regulaciones de Aviación Civil (RAC) in Central America, which is leading to the mutual acceptance of services (maintenance) and certification (personnel and operators), among others. CAAs and industry are now the main players and are participating fully in the certification process.

ACSA activities are carefully monitored to avoid duplication of effort within States. ACSA provides the States with technical support and allows the States to maintain their enforcement responsibilities and issue approvals to their operators and service providers. There is no doubt that the creation and ongoing operation of ACSA has improved the CAAs' performance through the synergies generated, as well as by providing an example of a model to follow. This improvement is appreciated by ICAO and the service providers involved.

Today, ACSA is also advocating removing barriers in the safety arena through various initiatives, including the implementation of safety requirements such as the Safety Management System (SMS) and the State Safety Programme (SSP), sharing safety information and best practices in the region, formulating strategies for increasing funding, and instituting policies to promote safety through regional advocacy strategies.

It can be shown that funds allocated for aviation safety, spent on quality projects such as training of the civil aviation inspectorate, have enabled ACSA to foster better relationships between the States involved and the industry. This positive relationship, in turn, influences the funding streams that are necessary for the sustainability of this RSOO.

THE LESSONS LEARNED

Experience has demonstrated that an adequately funded organization with qualified technical personnel and a regional strategy with measureable targets are critical components of a sustainable response to safety. Effective interventions, including the incorporation of the importance of safety training, are also critical to this process.

The pioneering work that ACSA has undertaken can be used as a model for States to follow. The major lessons learned are:

- Involvement at all levels is imperative;
- There must be willingness to implement the system;
- It is very important to build on the relationship with other organizations through cooperation and the exchange of experience and information; and
- Communication and trust among members within the system is essential to sustainability.

After 12 years of providing services to the CAAs, the growth of air traffic in the region and the downturn in the world economy have impacted aviation in the region, and have caused ACSA to contemplate next steps. These include, but are not limited to, the provision of services outside the region and global sharing of the experience gained by this innovative approach to meeting regional needs.

PARTNERING WITH ICAO

Stemming from the conclusions of the Symposium on Regional Safety Oversight Systems held at ICAO Headquarters from 26 to 28 October 2011, ACSA is taking a proactive role in communicating with States and RSOOs about their experiences. This has resulted in ACSA partnering with ICAO in the joint development of workshop material related to RSOOs. The intent is to share ACSA's experiences and capabilities on the optimization of State's resources by working at a regional level in the establishment and improvement of regional organizations through the creation of RSOOs, common rules, procedures and establishing qualified technical expertise within the region. This partnership is providing ACSA and ICAO with an opportunity to assist States in their endeavours to comply with international standards in regard to safety oversight by identifying potential challenges and possible solutions, as well as promoting best practices. ■

Leadership and Vision in Global Civil Aviation

www.icao.int

The International Civil Aviation Organization

"DADDY, I DON'T WANT TO GROW UP TO BE AN AIRLINE PILOT"

Why young people today don't aspire to be airline pilots—and what the airline industry must do to bring back the desire.

ABOUT GREG DARROW
Gregory Darrow has a long history of pilot training beginning with South Pacific Island Airways in the 1980s. Mr. Darrow has worked for Wings West, American Eagle, Aloha Airlines and American Airlines. A pilot with over 17,000 hours of flight time, he has flown and been an instructor on many regional and mainline aircraft, as well as an FAA training center examiner on Boeing 737 and 757/767 aircraft. After 10 years with Flight Training International, where he rose to Vice President, Mr. Darrow resigned in 2007 to accept the position with Pan Am International Flight Academy as Senior Director of Sales and Marketing. Mr. Darrow has assisted airlines around the world in recruiting, training and retaining flight crews.

Growing up, I dreamed of being an airline pilot. Like many other kids, I admired professional pilots and longed for the chance to fly with all the responsibilities and privileges that came with this occupation. Back then, I was motivated to do whatever it took to earn my place in this prestigious and exciting profession.

As the Senior Director of Sales and Marketing for Pan Am International Flight Academy, I have the opportunity to speak with a lot of young people today and have observed that the glamour and appeal of being an airline pilot is lost on them. They feel becoming a pilot is just another job option. They read about the turmoil in our industry, the frustrated passengers, bankruptcies and layoffs, as well as the changing compensation and benefits packages, and it has the effect of stalling them on the runway. With the increasing regulatory requirements and training cost associated with becoming a pilot (barriers that other careers don't have) it is easy to understand why there isn't the same desire to become an airline pilot that there once was. The glamour is gone because all they see are the problems and challenges.

It is clear that we are facing a historic pilot shortage severely impacting the airline industry within the next 10 years and beyond if something is not done to attract young people. According to the Boeing Company: "A pilot shortage has already arisen in many regions of the world. Airlines across the globe are expanding their fleets and flight schedules to meet surging demand in emerging markets. Asia in particular is experiencing delays and operational interruptions due to pilot scheduling constraints." This shortage will be very costly to the airline industry, but, I believe, there are measures that can be taken today to improve this situation and re-attract young people.

First, we must introduce the pilot profession to children at the grade school level. Next, the industry must develop clear career guidance for high school and college students. Lastly, there must be a clearer career path for young people in transition from school into the work force to help them find their way into an airline cockpit.

Many of us remember going to the airport when we were young and watching the jets take off and land and wondering what it would be like to be in command of that plane on its journey to destinations near and far. The airport was a magical

place and, if we were lucky, a few times a year, we'd find ourselves on one of those planes. For kids these days, airports and flying don't seem to be as magical as they once were. Terminals are crowded, Mom and Dad are frustrated, flights are full and then there is all the security. Forget about parking at the airport fence to watch the airplanes come and go.

What does this all mean? It means we have lost one of our industry's greatest recruiting tools—the public's positive perception of what we do. Our ability to sell our profession is being stripped away.

WHERE DO WE GO FROM HERE?

For starters, the airline industry (and most importantly, the airlines) should unite in an effort to re-ignite the dream of flying among the very young in grade school. These children are potential first officers, and in fifteen to twenty years, could be the generation that solves the pilot shortage. Introducing aviation at an early age could take many forms such as airline sponsored airport visits, aircraft tours, or industry designed presentations about the rewards of flying delivered by pilots at a "Career Day" or open house.

Flight schools can also participate. Our company, Pan Am International Flight Academy sponsors a "Pilot for a Day Programme" that lets young people fly an actual airline simulator. You can see the excitement in their faces as they take off and land at the controls of a B-777. They come away from the experience transformed. We have found it to be hugely successful in implanting the dream of flying. Student tours and introductory courses help provide young candidates with the opportunity to get excited about aviation at an early age and are investments that will pay dividends for years to come.

Accurate career guidance is critical for our industry to solve its pilot shortage issues. Today, most airline career guidance comes from family or friends, brokers who want to sell "Airline Career Counselling" or, if you're fortunate, a savvy school guidance counsellor.

I can't count the number of times I have spoken to people who, when they discover I am an airline pilot, say they've always wanted to be a pilot but…didn't because their vision was 20/25, or they were too tall, or they had a degree in accounting…or a million other invalid reasons for giving up their hope of one day being an airline pilot. The problem and excuses aren't so much theirs as they are ours, as an industry, for not doing a better job of educating and promoting our trade.

Aircraft manufacturers estimate that 460,000 new pilots will be needed worldwide between now and 2031 as global economies expand and airlines take deliveries of new commercial aircraft. No less than 69,000 new pilots will be needed in the United States alone. Our profession cannot

afford to lose one more aspirant because of a misconception of what it takes to become an airline pilot. Now is the time for a mid-course correction!

Together we must identify and develop a clear Career Guidance Package, starting in elementary school and continuing through our high schools and colleges. This package should include a description of the airline pilot profession: the requirements to become a commercial or airline transport pilot in the region; a list of flight schools, vocational institutions, colleges or military flight training programmes; financing opportunities for training; additional qualifications to improve their employment opportunities; minimum hiring requirements for airlines in the area; and lastly, airline and government programmes to assist students with entrance into flying careers.

These packages should be provided to every high school and college career counsellor as well as be available on government and airline websites. Access to this "career guide" is important so every student considering an airline career can make a decision based on accurate information about what it takes to become an airline pilot. FAA statistics show that the number of new pilot training candidates is at an alarmingly low rate. For airlines to have enough pilots to meet the growth demand, we need to reverse this trend. The Career Guidance Package, used especially on college campuses NOW, is one tool that could have an immediate impact and increase new pilot training candidates.

In the last few years, many companies in other industries have created direct entry career paths for high school and college students. Some of these programmes may begin with an internship or a preferential hiring programme for certain college degrees. In the past, most airline pilots came from civilian or military flight training programmes and, at a certain experience level, were qualified to apply for an airline pilot position.

In many parts of the world today, airlines are investing in cadet programmes that help place airline pilots in their cockpits. These programmes consist of an intensive screening programme followed by company indoctrination, company

sponsored flight training programme, line orientation training, and, finally, a first officer qualification check. There are many benefits to these types of programmes, but they are expensive and take accurate staff planning as it may take up to two years before this new hire is qualified as a line first officer.

Creating a clear career path to the airline cockpit for self-sponsored students is one of the tools I believe will increase the supply of qualified first officers for airlines at a more cost-effective rate than a fully sponsored airline cadet programme.

There are a few examples of these career path programmes working today in Asia and Europe. The CTC Aviation's Wings Programme, an industry leading example of airline and flight school cooperation, is a programme designed to provide candidates with a guaranteed first officer position if they complete the airline-specific training. The airline participates every step of the way from screening, to monitoring progress through the comprehensive MPL programme, to the line check.

Another example of airlines and a training school cooperating is the Preferential Interview Programme at Pan Am International Flight Academy. We have agreements with many airlines to screen candidates that come through our custom airline type rating programmes. These First Officer Type Rating Programmes use the airlines standard operating procedures and cockpit configuration to train potential new hires. If a pilot successfully completes the programme, Pan Am recommends the pilot to the airline for an interview. The airline benefits by having a candidate that is pre-screened for their flying environment and is dedicated enough to invest in their own qualifications. The pilot benefits by having a clear path to an interview with an airline the pilot desires to work for. These are just two examples of ways airlines can help direct more qualified candidates to their cockpits.

As the impending worldwide pilot shortage approaches, we must become proactive as a community to raise interest in the airline pilot profession. We need to do more to attract the very best to a career in aviation.

When I talk to young people who ask what it is like to be an airline pilot, I enthusiastically share how exciting it is with all the benefits and rewards this career provides. But I also share some advice given to me a long time ago. Being successful means finding something you love to do. I know of very few professions where most people say they love their jobs. Yet, with all the challenges, it's my observation that most airline pilots, without hesitation, will tell you that they love flying airliners. This love of flying must not be lost on our young people. It is the very message that will inspire the next first officer candidate to start flying. ■

ICAO AND THE UNIVERSAL POSTAL UNION: COLLABORATING TO ENSURE MAIL IS TRANSPORTED SAFELY BY AIR

UPU UNIVERSAL POSTAL UNION

ABOUT DR. KATHERINE ROONEY

Katherine joined ICAO in February 1993 as the Programme Manager for Dangerous Goods. As Secretary of the ICAO Dangerous Goods Panel, she is responsible for Annex 18 — The Safe Transport of Dangerous Goods by Air *and the biennial production of the* Technical Instructions for the Safe Transport of Dangerous Goods by Air *(Doc 9284), its Supplement (Doc 9284SU), and the* Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods *(Doc 9481). Katherine represents ICAO at the UN Sub-Committee of Experts on the Transport of Dangerous Goods, the International Atomic Energy Agency, and other relevant UN bodies. She is an ICAO certified Safety Oversight Auditor for dangerous goods. A chemist by training (holding a Ph.D. in catalytic inorganic chemistry), Katherine was a lecturer in environmental chemistry in Ireland. Prior to joining ICAO, Katherine worked in London for EXIS and SITA and was responsible for developing computer-based systems for dangerous goods by all transport modes. ICAO's Secretary General, recognizing the increasing role safely transporting goods plays in aviation safety, recently established a Dangerous Goods Section and appointed Dr. Rooney as Chief.*

Dangerous goods are articles or substances capable of posing a risk to health, safety, property or the environment. They include many everyday items such as batteries, cleaning fluids and even perfumes. They are routinely carried safely as cargo on both passenger and freighter aircraft through compliance with requirements contained in the International Civil Aviation Organization's (ICAO's) *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) (also known as the Technical Instructions).

Non-compliance with the Technical Instructions has resulted in many incidents and several accidents. The crash of ValuJet Flight 592 in the Florida Everglades in May 1996 is a chilling reminder of why compliance is so important. One hundred and ten people lost their lives that day when a fire, initiated by the actuation of chemical oxygen generators which were improperly prepared, packaged, and identified, caused the aircraft to crash into the ground.

It is believed that there has never been an incident or accident which resulted from dangerous goods that were being transported in compliance with the Technical Instructions. Accidents or incidents have occurred because one (and usually more than one) of the requirements was ignored.

Often, ignoring requirements is not a deliberate act; it may be the result of a lack of awareness that rules exist or due to a lack of understanding of how to apply these rules. Proper training is therefore critical to ensure everyone involved in transporting dangerous goods applies the provisions in the Technical Instructions correctly and completely.

AIRMAIL

One of ICAO's concerns has been the transportation of dangerous goods by mail. The Universal Postal Union (UPU) prohibits sending dangerous goods in the mail (except for a few specialized items). This prohibition is reflected in the Technical Instructions, making it illegal to send dangerous goods by airmail.

In reality, dangerous goods enter the mail stream every day. One State's random sample of over 30,000 packets and parcels led to an estimate that one to three per cent of items sent by post in that State routinely contained dangerous goods. Similar findings have been reported in other States.

Certainly, most of these packets and parcels were not sent by people who knew they were breaking the rules. More likely, they were sent by

individuals, companies or organizations who did not know there were rules in place or that what they were sending was considered dangerous for transport.

Ensuring that customers are aware of the rules and how to properly apply them is therefore the first line of defence in controlling the introduction of all dangerous goods in the mail. The next line of defence rests with the postal workers who accept items for the mail. They must know how to identify postal items that might potentially contain dangerous goods and the procedures to follow if they do. Procedures for controlling the introduction of dangerous goods in mail into air transport are essential, as is ensuring that postal employees are trained to apply them.

As the international organization tasked with setting the rules for mail exchange, the UPU determines what can be safely placed in mailbags. As the international organization tasked with setting the rules for civil aviation, ICAO determines what cargo can be safely loaded on an aircraft.

ICAO recommends (through Annex 18 to the Convention on International Civil Aviation — *The Safe Transport of Dangerous Goods by Air)* that each Contracting State establish procedures for controlling the introduction of dangerous goods into air transport through its postal services, and the UPU establishes international procedures for controlling the introduction through the postal services.

The procedures the UPU establishes have been beyond the purview of ICAO. The Technical Instructions do not require the establishment of dangerous goods training programmes for staff of Designated Postal Operators (DPOs), although this is a requirement for others involved in the transport of dangerous goods by air including shippers, packers, freight forwarders, operators, and security staff. These programmes are subject to review and approval by Civil Aviation Authorities (CAAs), with approval being mandatory for operators.

LITHIUM BATTERIES

A recent change to the UPU Convention to allow small quantities of lithium batteries contained in equipment in the mail prompted the need for closer collaboration between ICAO and the UPU and, in turn, between civil aviation and national postal authorities.

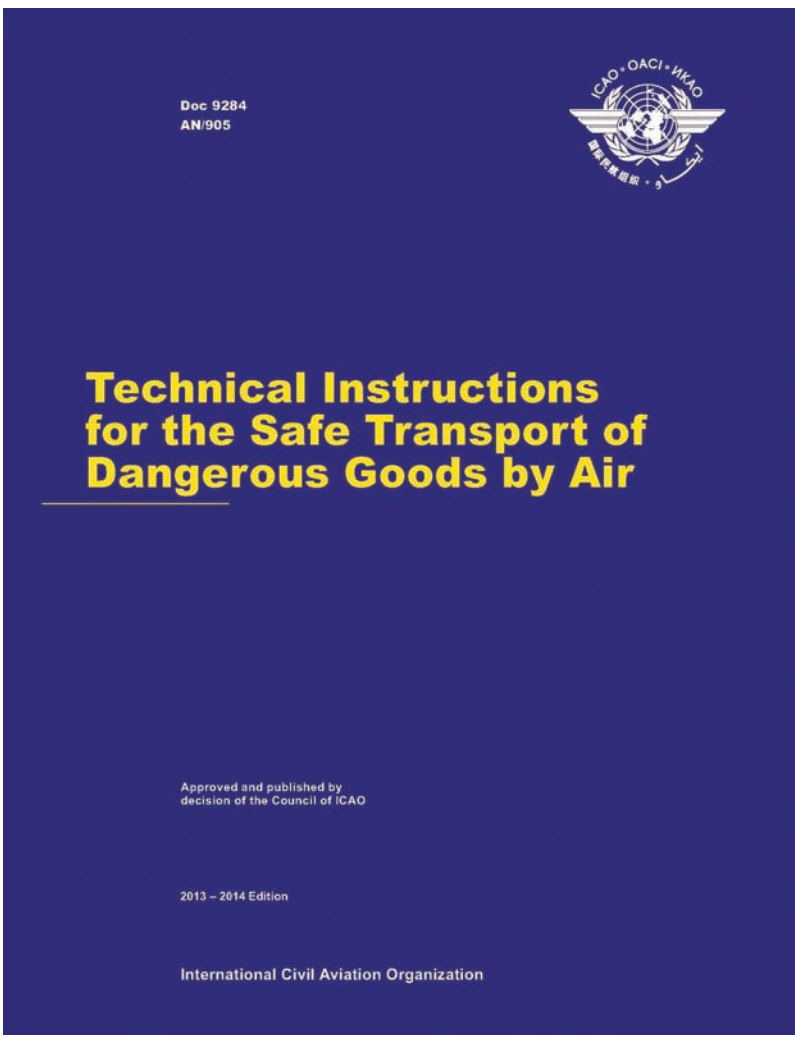
Lithium batteries are considered dangerous goods because they have the potential to overheat and catch fire. Used to power cell phones, computers and countless other electronic devices, they have become an indispensable part of most people's daily lives. Unsurprisingly, they are often unwittingly sent by mail on their own or contained in the electronic devices they power.

Recognizing the hazards associated with lithium batteries, ICAO was initially hesitant to allow them in airmail. But it also recognized the reality that, despite being forbidden, batteries would likely continue to be sent unsafely by mail at an increasing rate.

ICAO and the UPU saw an opportunity to work together to establish a system which would allow lithium batteries contained in equipment to be sent by airmail safely and legally, while at the same time providing a mechanism for controlling the introduction of all dangerous goods in the mail, not just lithium batteries.

NEW COLLABORATIVE EFFORTS

The two organizations have already collaborated on creating a competency-based framework for postal workers which will help DPOs develop dangerous goods training programmes in their State. These training programmes will provide postal workers with the capability to increase customer awareness of what is not permitted in the mail, reduce the possibility that these items will enter the mail stream, and verify that permitted items are prepared and packaged in accordance with the Technical Instructions.



Often, ignoring requirements is not a deliberate act; it may be the result of a lack of awareness that rules exist or due to a lack of understanding of how to apply these rules. Proper training is therefore critical to ensure everyone involved in transporting dangerous goods applies the provisions in the Technical Instructions correctly and completely.

These training programmes, along with the designated postal operator's procedures for controlling the introduction of dangerous goods in the mail, will require approval by the CAA before DPOs can begin accepting lithium batteries contained in equipment in the mail in their State.

The benefits of this new partnership are already emerging. The UPU has developed manuals and training kits to help national postal authorities develop their own dangerous goods programmes. DPOs, recognizing the needs of their customers and the potential for increased revenue, are eager to begin accepting equipment containing lithium batteries. Some, through close cooperation with their CAAs, have already revised their operational procedures and training programmes and are in a position to have them approved by their CAA.

Once approved, consumers and retailers will be able to send cell phones, computers, and other electronic devices containing lithium batteries from within that State beginning 1 January 2013, the date the new edition of the Technical Instructions becomes operational.

The number of consumer articles which require lithium batteries is continually increasing, as is the demand for longer lasting batteries. This has led the battery industry to find new ways to increase their energy density. Alternate forms of energy are also emerging, some which might present different hazards for transport.

Making sure that training programmes and operational procedures address demand for consumer products containing dangerous goods will be an ongoing challenge. The partnership that ICAO and the UPU have established will play a significant role in addressing this challenge.

The UPU/ICAO partnership is an example of two organizations coming together in new and innovative ways in order to address change. It is safe to say that this partnership will be a permanent one. ■

COOPERATIVE STRATEGIES TO SUSTAIN HUMAN AND INTELLECTUAL CAPITAL WITHIN THE AVIATION INDUSTRY

ABOUT ISMAIL ALBAIDHANI
Ismail Albaidhani is the Head of Global Partnership & Learning Innovation at the International Air Transport Association (IATA) Training & Development Institute (ITDI). He leads the industry professional development programmes in the aviation, cargo, travel and tourism sectors, which are delivered to over 65,000 industry specialists and young students every year from IATA Headquarters in Montreal, Canada in partnership with over 400 strategic partners in more than 80 countries. In addition to his role in IATA, Mr. Albaidhani is a member of the Advisory Boards and the Scientific Committees of the University of Geneva Aviation Management Program, and the Stanford Aviation Management Diploma. He also lectures on Strategy and Project Management at the University of Geneva and ITDI in several locations. Mr. Albaidhani is a member of the ICAO Next Generation of Aviation Professionals (NGAP) Task Force.

THE CHALLENGES AHEAD

Our industry is about to face a tremendous challenge with regard to the supply of talent. Driven from the recovery of the global economy, particularly the expansion of the middle class in Asia, the number of passengers and amount of cargo is growing and is expected to grow faster as each year unfolds. Statistics are proving this trend. According to a recent IATA press release, international air travel rose 5.5% in January year over year, while capacity climbed 4.2%, resulting in a load factor of 76.6%, up from 75.7% last year, with emerging markets posting the highest growth.

The impact of Chinese New Year-related traffic was evidenced in China's domestic market, which surged 16.8% year over year on a 14.3% lift in capacity, pushing load factor to 80.8%, the highest recorded for domestic traffic. In addition, Middle East airlines recorded double-digit traffic growth in January, posting a 14.5% increase. With these increases come a big demand to increase human capital resources in all areas of the aviation industry with specific needs in both pilots and technical expertise as emerging markets show demand for such skills.

Already, the industry has started to prepare for this growth by upgrading and expanding fleet networks. To that point, Boeing forecasts that their fleet will grow from about 19,400 planes in 2010 to more than 39,500 by 2030[1]. During the same timeframe, Airbus foresees the need for more than 26,900 passenger airliners with seating capacities of 100 seats and above, along with over 900 new factory-built freighter aircraft[2]. As such, it is expected that the world's overall passenger aircraft inventory will more than double by 2030, prompting the demand for more human capital within the industry. In addition, countries around the globe are expanding their aviation infrastructures to support this growth, building new airports and terminals in a variety of locations around the world.

However, to handle this unprecedented activity, it is vital that we answer the question about human capital supply. Currently, the human capital situation of our industry is comprised of three main groups:

- experienced experts on the verge of retirement without proper succession planning or knowledge transfer;
- an overworked workforce that is constantly challenged to keep up with industry and regulatory changes, but with diminishing financial and non-financial motivation; and
- students choosing other sectors instead of our industry. This lack of interest comes from poorly defined career development plans, as well as low financial compensations as compared to other industries.

We need to rethink the way we value the intellectual and human capital of our industry.

Incredibly, this situation comes at the time that unemployment rates, especially amongst youth, are at record highs in different parts of the world. According to Bloomberg, the jobless rate in the 17-nation European Union stands at 10.9%. In Africa, the unemployment rate is 8.2%. And in the Americas, countries generally have unemployment in excess of 8%.

SOME PRACTICAL STEPS FORWARD

We need to rethink the way we value the intellectual and human capital of our industry. Sustaining human and intellectual capital within our industry can be accomplished by developing cooperative strategies for each group.

Retiring Personnel

Cooperative strategies must be developed within the industry itself to formalize the knowledge and intellectual capital of experienced individuals and transfer that expertise to others to expand and improve skills and knowledge. As well, it is incumbent upon the industry to identify and retain talent within companies to maintain business continuity and ongoing professional excellence. This may be accomplished by offering existing experts the opportunity to give back to the industry by becoming mentors to new generations of aviation professionals.

The industry is sustainable based on the quality of knowledge that exists within it. To ensure sustainability, the knowledge of retiring personnel should be leveraged and recycled within the industry to ensure efficiency and productivity. For example, senior Pilot Captains should pass on their knowledge to junior First Officers. And at an executive level, senior administrators should share their skills and expertise with new talented managers on a fast-track career progression corporate strategy.

Existing Professionals

To sustain human capital, it is critical that we ensure a lifelong learning journey for existing personnel. This might be accomplished by providing existing professionals the opportunity to advance and increase their knowledge via online courses on mobile phones and e-learning platforms that offer anytime, anywhere accessibility.

Corporations might explore rotating personnel so that employee motivation is increased and business continuity is assured by having backup personnel prepared to handle more responsibilities within different departments locally and worldwide.

Working in a rigid environment has been known to block creativity and dampen motivation. By offering flexible working hours, as well as the flexibility to work across a variety of activities, creativity is encouraged and new skills and knowledge are developed. This also enhances productivity and increases effectiveness at work.

An often overlooked motivator is certification. Through certification, we create loyal professionals and talent that will remain in the industry for years while avoiding knowledge loss. For example, with IATA's Aviation Management Professional (AvMP) certification, the industry can retain more human capital through a recognized and well-respected community of professionals within the aviation world.

Next Generation of Aviation Professionals (NGAP)

This group represents the future of our industry. As such, it is critical to attract them and retain them over the coming years.

Potential next generation professionals look to social media as a way to connect with people and opportunities. Resources such as LinkedIn have created a community where knowledge is shared amongst professionals. This communication means will be key to reaching out to next generations in order to bring them into the industry.

Believe it or not, Gaming is a strong motivator. It has been proven that both intellectual and tactile skills can be rapidly honed through gaming environments where particular skills such as repetition, recall and problem-solving can be enhanced. In fact, Gaming has progressed to become a new and common

To sustain human capital, it is critical that we ensure a lifelong learning journey for existing personnel.

way to train and acquire knowledge. It helps learning by introducing concepts through a game environment and training via simulation that touches upon virtual reality, 3D and 4D real-time dimensions. In the world of aviation, this has already been pioneered by the development of flight simulation technologies.

OFFICIAL AND ACADEMIC TRAINING

It is as important to acquire strength from proven academic establishments as it is from within our aviation industry. Through prestigious academic and industry partnerships, such as the IATA Harvard and IATA Stanford Programmes, the flow of knowledge is streamlined and transferred to industry professionals to create the next generation of aviation industry leaders.

COOPERATION, COLLABORATION, PARTNERING, MENTORING

These are not buzzwords when discussing the future of global aviation. Can we induce our experienced professionals to share their knowledge and expertise? Is it possible to create the type of stimulating environment that encourages higher retention levels and inspires our current crop of aviation professionals to advance within a rapidly changing work environment? And finally, what will it take to attract the next generation given the myriad of alternatives this group faces?

Corporations must innovate and do so by enlisting the creativity of their best and brightest. New programmes are likely to incorporate new ways of delivering training in partnership with academia, technology providers and perhaps even the electronic gaming industry. Integrating social media in any mix of educating, training and interacting with prospective aviation professionals will be key to the sustainability of the industry going forward.

The industry is facing a daunting challenge. But given the history of aviation, we have proven time and again that we are equal to the task at hand. ■

[1] Boeing Long-Term Market Article

[2] Airbus market forecast 2011 - 2030

ATNS' COMMITMENT TO THE DEVELOPMENT OF WOMEN IN AVIATION

By Rodney Subramany, Senior Manager Training

Of the 196 countries that belong to the United Nations, only 20 have female Heads of State. This translates to approximately 10% of the world leaders being female. Of the 20, Africa is proudly represented by 2 female Heads of State. In a world where the ratio of male to female is approximately 1.05 to 1, a leadership ratio of 11 to 1 is undoubtedly a glaring anomaly.

It is within this context that the Air Traffic and Navigation Services Company (ATNS) recognises the strategic imperative to provide for and focus on the development and growth of women in the workplace.

It is the organisation's long-term strategy to facilitate the appropriate representation of women at all levels of the organisation in line with ATNS' Employment Equity (EE) Plan.

ATNS has adopted a continuous focus on women's development, which aims to achieve the following:

- To provide opportunities for women to progress in the organisation;
- To ensure the progression of women enabling sufficient representation at the various organisational bands, particularly professional, executive and management levels;

- To provide focused women's development programmes to attract and retain professional women;
- To support the achievement of employment equity objectives where the need to appoint or promote women has been identified;
- To promote employer of choice recognition by ensuring equity and representation of women;
- To provide a space for women to share their insights, wisdom, experiences, challenges, fears and circumstances with a view to enriching their lives and work;
- To create greater recruitment, career advancement and opportunities for women as stipulated in the ATNS EE plan; and
- To invest in making a difference within the lives of not only women in ATNS but the South African community as a whole.

Although the initiative focuses on the development of women, men play an important role in sharing their wealth of knowledge and experience. This has been captured through the flagship Women's Development Programme (WDP) Mentorship Programme, which created a formal platform for experienced male employees to mentor a group of female employees within their areas of expertise.

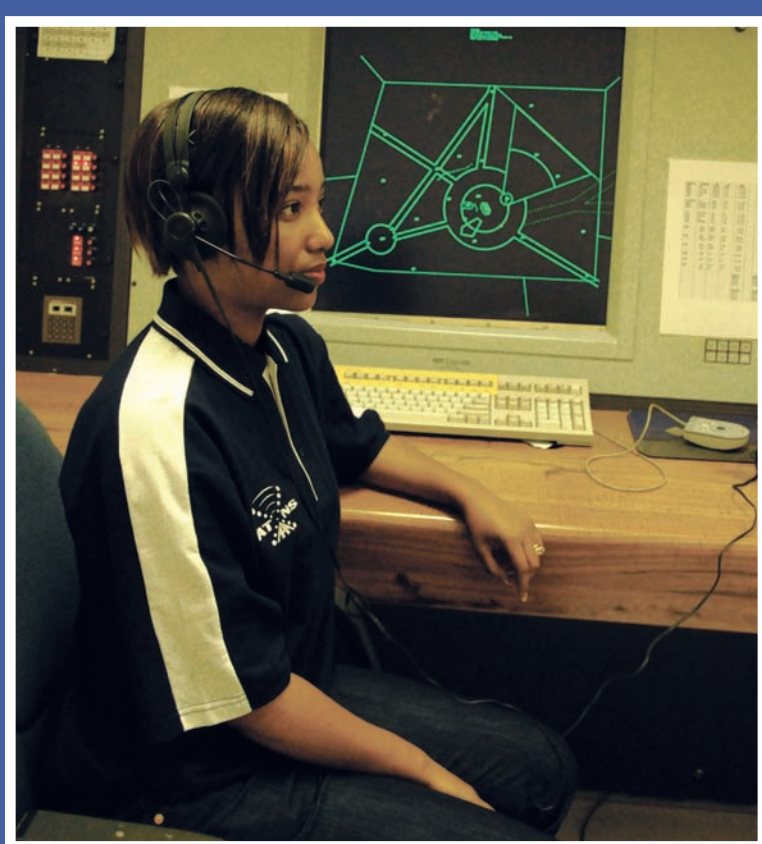
This initiative comprises 4 streams catering for various stages of leadership development:

- Primary Development Programme for Women in the form of motivational talks, women's functions, image consultants etc.
- Personal Capacity and Leadership for Women Programme
- Senior Management Women's Development Programme
- Executive Women's Development Programme

Women in the organisation will have the flexibility of choosing any of the programmes which would enhance their effectiveness, and facilitate personal and organisational advancement.

As part of the Senior Management Development Programme, we have partnered with WITS Business Hub to create an Aviation Management Development Programme. The programme, which is the first of its kind in South Africa, blends the content of the renowned WITS Management Development Programme (MDP) with a much needed aviation component. The success of the programme has prompted us to market it to the wider aviation industry in South Africa.

Since the Wright Brothers' first flight, women have been knocking on the door of the industry - some successfully, others not. ATNS is of the firm belief that beyond biological lines, nothing separates the two genders. Testimony to this belief is our continued commitment to this programme. Over 100 women have, over the last 2 years, had exclusive opportunities to training initiatives that would otherwise have eluded them. ■



ICAO TRAINING REPORT DIRECTORY LISTINGS

AFRICA

AIR TRAFFIC (AIR TRAFFIC AND NAVIGATION SERVICES – ATNS) (SOUTH AFRICA)

Leaders in the Provision of Air Traffic Management, Navigation, Training and Related Services

Contact: Ms. Thandi Mosupye, Senior Manager Marketing and Communications – **Email:** marketing@atns.co.za
Tel: +27 0860 2867 26 – **URL:** www.atns.com

ATNS is responsible for air traffic control in approximately 10 percent of the world's airspace. Our services extend further than the familiar air traffic control service, into the provision of vitally important aeronautical information used for all flight planning purposes as well as search and rescue coordination activities and the maintenance of a reliable navigation infrastructure.

EAST AFRICAN SCHOOL OF AVIATION (KENYA)

The Sky is Only the Lower Limit

Contact: Director, East African School of Aviation – **Email:** info@easa.ac.ke
Tel: +254 20 6823602/7 – **URL:** www.easa.ac.ke

The East African School of Aviation is the training department of the Kenya Civil Aviation Authority. It is a premier aviation training institution in Africa established in 1954 to provide skilled personnel for the aviation industry. The school is one of the 17 worldwide Civil Aviation Training Centres members of the International Civil Aviation Organisation's (ICAO) TRAINAIR PLUS Programme and one of the three Regional Aviation Training Centres in Africa. At EASA, we create competent human capital for the aviation industry in the region to enhance global aviation safety & security.

INSTITUT DE FORMATION PROFESSIONNELLE SI MHIDINE (IFPSM) (ALGERIE)

Former c'est grandir. Apprendre c'est réussir

Email: contact@ifpsm-dz.com
Tel: +213 26 21 31 75 – **Fax:** +213 26 21 04 53 – **URL:** www.ifpsm-dz.com

Nos formations sont régis et sous le contrôle de la DACM Algérie : personnel Navigant commercial (PNC), hôtesses de l'air, stewards, anglais aéronautique (normes OACI), agents sol et Handling, billetterie (agences de tourisme), accueil (comptoirs, réceptions, événementiel). Nos formations sont assurées par des formateurs expérimentés et homologués par les autorités nationales et internationales. Nos établissements de formation sont aux normes règlementaires et conformes aux exigences des établissements agrées de l'enseignement professionnel.

LOUMED CABIN CREW TRAINING CENTER, LCCTC (MOROCCO)

Your Education is Our Priority

Contact: Mrs. Loubna Ouhadious Hoummady, Executive Director – **Email:** loumedpncenter@gmail.com
Tel: +32 71 34 55 10 – **URL:** www.lcctc.ma/www.lcctc.net

LCCTC is a cabin crew training center which is located in Agadir, south of Morocco, the sunniest city throughout the year. LCCTC provides a set of coherent and consistent training taking into account the international requirements of training. To offer a high level of training and maintain a high success rate, LCCTC has focused the collaboration of professionals in the business of aviation. Also all the main subjects are taught in French and English. At LCCTC, quality and the steps associated with it are a guarantee and continuous improvement in performance. LCCTC makes your dream a reality.

AFRICA

NIGERIAN COLLEGE OF AVIATION TECHNOLOGY, ZARIA (NIGERIA)

Training for Excellence

Contact: Engr. Zakari Adamu Zubairu, Deputy Rector – **Email:** deputy-rector@ncat.gov.ng
Tel: +234 704 513 7170 or +234 803 703 9671 or +234 69 879271 – **URL:** www.ncat.gov.ng

NCAT is a unique government institution established in 1964 to train aviation professionals. It trains Pilots, Air Traffic Controllers, Aircraft Maintenance Engineers, Aeronautical Telecommunications Engineers, Flight Dispatchers, Cabin Crew, Avionics Engineers, etc. It implements training programs which conform to ICAO standards and recommended practices, meeting national and international needs for both operational and top-level management personnel. NCAT consists of five co-located Schools; Aviation Management, Flying, Aircraft Maintenance Engineering, Air Traffic Services/Communications and Aeronautical Telecommunications Engineering.

UNITED ATS (EGYPT)

Committed to Aviation Excellence

Contact: Mr. Amr Mohamed Shehata, Training Director – **Email:** training@unitedats.com
Tel: +201144561117 – **Fax:** +201006090684 – **URL:** www.unitedats.com

United ATS plays an integral part in aviation safety by providing competent and professional services/training which complies with international standards. Services/training is provided with integrity that is customer focused and places value on safety in the aviation industry. We provide solutions to stakeholders to meet mandatory ICAO requirements, such services are AIS to AIM, Instrument Procedures Design, airspace management and design, Aeronautical Studies, Aeronautical Survey, Turn Key eTOD services and all related professional Air Navigation training.

ASIA AND PACIFIC

AVSECO (CHINA - HONG KONG)

A Global Leader in AVSECO Service & Training

Contact: Tony Blackiston, Deputy Director AVSECO Academy – **Email:** academy@avseco.com.hk
Tel: 852 3925 5500 – **Fax:** 852 3925 1566 – **URL:** www.avseco.com.hk

The Aviation Security Academy of the Aviation Security Company Limited (AVSECO), Hong Kong was established in 1999, and was accredited as an ICAO Asia Pacific Sub-Regional Aviation Security Training Centre in 2005 and IATA Affiliated Regional Training Centre in 2008. The Academy provides a comprehensive range of training courses for personnel engaged in aviation operations worldwide.

SINGAPORE AVIATION ACADEMY (SINGAPORE)

Developing Talent for Global Aviation

Contact: Ms. Zheng Wanting, Executive (Marketing & Promotions) – **Email:** saa@caas.gov.sg
Tel: +65 6540 6295/6543 0433 – **Fax:** +65 6542 9890/6543 2778 – **URL:** www.saa.com.sg

The Singapore Aviation Academy (SAA) is the training arm of the Civil Aviation Authority of Singapore. An internationally-recognised aviation training institute, SAA offers a wide range of programmes under its four specialised schools – School of Aviation Management, School of Aviation Safety and Security, School of Air Traffic Services and School of Airport Emergency Services – that benchmark international standards and best practices to meet the training needs of the global aviation community.

EUROPE

ANGLO-CONTINENTAL (ENGLAND)

Established in 1950

Contact: Véronique Bethell – **Email:** aviation@anglo-continental.com
Tel: +44 1202 411887 – **URL:** www.aviation-english-division.com

Anglo-Continental, accredited by the British Council, is a leading English language teaching organisation. We have been specialising in teaching Aviation English worldwide for 40 years. Recently, Anglo-Continental has developed programmes and a test designed for aviation personnel to meet ICAO's language proficiency requirements. We offer scheduled and bespoke courses for aviation personnel, in order to meet our customers' specific requirements. Anglo-Continental's professionally trained raters and our centres deliver our test in the UK and abroad.

AXIS (AUSTRIA)

Your Partner, Not a Competitor

Contact: Hannes Pieringer, Head of Marketing & Sales – **Email:** h.pieringer@axis-simulations.at
Tel: +43 0 5 9889 - 102 – **Fax:** +43 0 5 9889 - 115 – **Cell:** +43 0 664 8865 9881 – **URL:** www.axis-simulations.aero

AXIS builds simulators. Unlike others, we don't give training. That means we are fully focused on our customers needs and our customers are always our first priority. One of our design focus areas is maintenance. For some it is an afterthought; to us, it is one of the keys to high return on investment. Reducing the amount of maintenance needed, making what remains easier to do, and minimizing the potential for unplanned downtime all help to make operations more profitable for our users.

BELGIAN FLIGHT SCHOOL (BELGIUM)

The Best Way to Touch the Sky!

Contact: Mr. Maxime Wauters, Business Development Manager – **Email:** m.wauters@bfgroup.aero or info@bfschool.aero
Tel: +32 71 34 55 10 – **URL:** www.bfschool.aero/www.bfgroup.aero

Belgian Flight School is Belgium's leading Flight Training Organization for airline pilots. The organization is approved by the Belgian Civil Aviation Authorities (BCAA), on behalf of the Joint Aviation Authorities (JAA), to train airline pilots according to current European regulations (EASA/JAR-FCL). BFS offers an innovative Integrated ATPL program, offered in joint venture with Aerosim Flight Academy (USA) and provides a state of the art, competency based training program. The school also offers a modular program. Since 2008, BFS became a member of BFG (Belgian Flight Group) headquartered at the airport of Charleroi Brussels-South, which offers a wide range of services (other than pilot training) related to general and business aviation.

CAA INTERNATIONAL (UNITED KINGDOM)

Committed to Supporting Aviation Safety Around the World

Contact: Training Team – **Email:** training@caainternational.com
Tel: +44 0 1293 768821 – **URL:** www.caainternational.com

CAA International (CAAi) is a leading, globally recognised aviation consultancy and training company that delivers and promotes best practice in aviation governance and education. CAAi's dedicated training consultancy is globally recognised as a market leader in professional aviation training. We offer a comprehensive portfolio of public access courses and tailored training programmes designed to cover all aspects of aviation safety regulation. Our training services are based on ICAO Standards and Recommended Practices (as a minimum), with the key objective of providing the highest levels of practical training that delivers results for individuals and organisations.

ÉCOLE NATIONALE DE L'AVIATION CIVILE – ENAC (FRANCE)

Live Your Passion and Take Off to Your Future

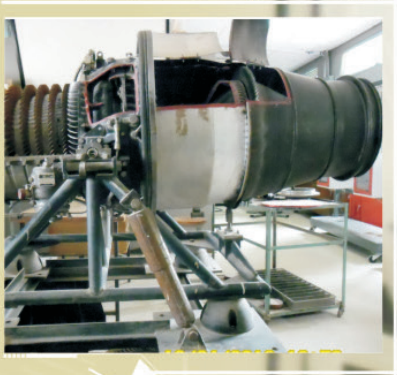
Contact: Isabelle Rossi, International and Commercial Affairs Assistant – **Email:** isabelle.rossi@enac.fr
Tel: +33 0 5 62 17 44 38 – **URL:** www.enac.fr

ENAC is a unique aviation university in the world that offers a wide range of ab-initio and refresher courses for the executives and main actors of the civil aviation world, for both private and public sectors in all fields of its well known expertise: ATM, CNS, airports, air transport, AVSEC, human factors and aviation English. ENAC also provides training courses for airline transport pilots and flight instructors. ENAC can set up tailor-made courses to meet specific needs.

NIGERIAN COLLEGE OF AVIATION TECHNOLOGY, ZARIA

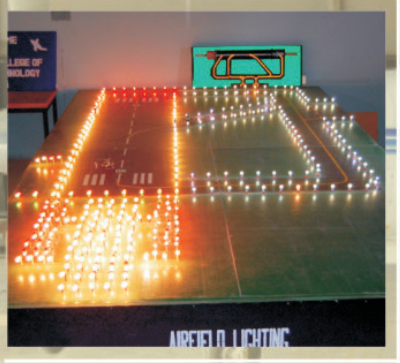
TRAINING FOR EXCELLENCE...

Aircraft Maintenance Engineering School.



Air Traffic Services/Communication School

Flying School.



Aeronautical Telecommunications Engineering School.

Aviation Management School.

Since 1964, we have been involved in the training business, conducting various types of training:

- Pilot Training (CPL/IR/ME)
- Aircraft Dispatcher Training
- Cabin Crew Training
- Aircraft maintenance Engineering Training (Airframe & Power plant for fixed and rotary wing)
- Aircraft Maintenance Engineering(Avionics)
- Human Factors in Aircraft Maintenance
- Crew Resource Management
- Air Traffic Control Training
- Aviation Security Training
- Airport Operations Training
- Alcatel DVOR Equipment Training(TRAINAIR STP)
- Alcatel ILS Equipment Training
- Airfield Ground Lighting Systems Training
- Air Transport Economics Training
- Post Graduate Diploma in Aviation Management

Contact Us

+234 704 100 2230
+234 704 513 7170
+234 704 395 9158

rector@ncat.gov.ng
deputyrector@ncat.gov.ng
registrar@ncat.gov.ng

www.ncat.gov.ng

EUROPE

EMERY ROBERTS - AVIATION ENGLISH TRAINING (UNITED KINGDOM)

Best Practice in Aviation English Training and Testing

Contact: Mr. Andy Roberts, Director of Training – **Email:** contact@emery-roberts.co.uk
Tel: +44 0 7977 43 9908 – **URL:** www.emery-roberts.co.uk

Emery-Roberts Aviation English Training Limited (ER) is an internationally-recognised leading provider of aviation English language education and assessment services. ER provides a wide range of scheduled and bespoke language training and testing solutions for the aviation industry. Services are delivered at our training centre in the UK, or at the customer's preferred location. In keeping with ER's reputation for innovation, 2012 sees the launch of 'Aviation English Live'- live interactive practice in the Emery-Roberts Virtual Aviation English Academy.

FINSECPRO (FINLAND)

Innovative Concepts for Aviation Security and Safety, Nation and Worldwide

Contact: Mr. Jan Kappi – **Email:** jan.kappi@finsecpro.com
Tel: +358 45 111 8343 – **URL:** www.finsecpro.com

FINSECPRO is an IATA Strategic Partner company established in 1994, specialized internationally in DG and security training and consulting including tests, audits and inspections and policy making. It implements audit and training programmes meeting US/EC/ICAO's standards and recommended practices for both operational and top-level management personnel. Author of www.whattobringonaflight.com service.

HELLENIC AVIATION TRAINING ACADEMY – HATA (GREECE)

Beyond the Front Row!

Contact: Mr. Theodosios S. Arpatzoglou, Head of Training – **Email:** hot@hata.edu.gr
Tel: +30 22990 41314 – **URL:** www.hata.edu.gr

The Hellenic Aviation Training Academy (HATA), minutes from Athens International Airport, is the organisational centre of comprehensive service and support solutions including EASA/HCAA approved training for maintenance, flight operations and management, product life-cycle extension, aircraft evaluation/acquisition services and technical publications. HATA satisfies the ever-increasing needs of the civil aviation industry in the south eastern Mediterranean and international markets by developing tailored solutions providing optimum value and effect.

INTERNATIONAL SAFETY TRAINING COLLEGE (MALTA)

ISTC, the Answer to All Your Aviation Emergency Response Requirements

Contact: Charlene Balzan Mercieca, Logistics Coordinator – **Email:** info@istcentre.com
Tel: +356 21658281 – **URL:** www.istcentre.com

The International Safety Training College (ISTC) is Malta's pre-eminent training centre focussing upon emergency response, disaster management, health, safety and the environment. The unique training facilities are specifically designed to satisfy the learning outcomes required for the aviation, oil and gas or marine industries, which are accomplished on the large incident ground where risk critical training is undertaken on a daily basis.

MACMILLAN EDUCATION (UNITED KINGDOM)

Your Partner in Education

Contact: Charlotte Ellis, Marketing Executive (Adult, Professional and Methodology) – **Email:** help@macmillan.com
Tel: +44 0 1865 405700 – **URL:** www.macmillanenglish.com/aviationenglish

Macmillan Education is a leading publisher of materials for learning English. In 2008 Macmillan was one of the first publishers to produce materials for pilots and air traffic controllers to achieve and maintain level 4 of the ICAO language requirements. Aviation English and Check Your Aviation English were authored by experts in the field, Henry Emery and Andy Roberts, and are ideal preparation for any aviation English exam.

EUROPE

MAYFLOWER COLLEGE (UNITED KINGDOM)

A leader in Aviation English Training & Testing

Contact: Mr. Paul Stevens, Director – **Email:** paul@maycoll.co.uk – **Tel:** +44 1752 673784 – **URL:** www.aviation-english.com/www.english.aero

Mayflower College has been working in the 'Aviation English' field since 1988 and provides:
- Courses for pilots, controllers, teachers and examiners in the UK or at the customer's location;
- 'Climb Level 4' – the leading online programme for aviation professionals aiming to reach ICAO Level 4 or 5;
- Test of English for Aviation (T.E.A.) – a face-to-face test delivered at over 100 test centres around the world.

THALES ATM TRAINING INSTITUTE (FRANCE)

Long-term Relationship with Our Customers to Fulfil Future Training Needs

Contact: Mr. Roland GILLE, ILS Manager – **Email:** roland.gille@thalesgroup.com – **Tel:** +33 0 1 79 61 30 81 – **URL:** www.thalesatm-services.com

Thales is world leader in ATM systems and civil radars, and has 70 percent market share in the navigation aids market. Thales offers integrated gate-to-gate solutions, from pre-flight to landing, ensuring airport safety, efficient traffic handling operations, data sharing on aircraft and seamless handover operations between territories. Thales is involved in the key Single European Sky ATM Research (SESAR) program in Europe, in which it is the largest industrial contributor, as well as a key technology partner in the US NextGen programme.

THE ICAO TRAINING INSTITUTE – NATIONAL AVIATION UNIVERSITY (UKRAINE)

Training to Face Any Challenge

Contact: Prof. Galyna Suslova, Director – **Email:** eduicao@nau.edu.ua – **Tel:** +38 044 406 72 19 or +38 044 457 69 12 – **URL:** www.icao.nau.edu.ua

The ICAO Training Institute provides training at four specialized centers – European Sub-regional Aviation Security and Government Safety Inspectors Training Centers being endorsed by ICAO and national centers certified by the CAA of Ukraine. It is a member of the ECAC Network of Training Organisations. The standardized training packages based on the ICAO methodology have been tailored to meet international and national requirements. We have got the experienced instructors to conduct training in English and Russian. High quality training is the main priority of the ICAO Training Institute.

TURKISH AIRLINES AVIATION ACADEMY (TURKEY)

Fly to Knowledge with Experience

Email: aviationacademy@thy.com – **Tel:** +90 212 463 63 63 ext: 13308/17985/17463/17787 – **URL:** www.academy.thy.com

For over 25 years, Turkish Airlines Aviation Academy has been servicing many companies throughout Turkey and around the world. The Academy delivers trainings to around 25.000 people annually in two separate buildings, one of which is the new hangar building where the technical training unit is, with 32 classrooms and an auditorium of 120 seats. Turkish Airlines Aviation Academy delivers training services in the following fields: EASA Approved Technical Trainings; Commercial & Ground Handling Trainings (ICAO Approval); Management and Personal Development Trainings; Aviation and General English Trainings; IATA Trainings (ATC & RTC Partner) and Flight Phobia Programme.

NORTH AMERICA

AIRPORTS COUNCIL INTERNATIONAL GLOBAL TRAINING (CANADA)

Reach Your Highest Potential

Contact: Mr. Kevin Caron, Assistant Director, Global Training – **Email:** training@aci.aero – **Tel:** +1 514 373-1200 – **URL:** www.aci.aero/training

In 1991 airport operators around the world created Airports Council International – the first worldwide association to represent their common interests and foster cooperation with partners throughout the air transport industry. At the same time, ACI provides the platform for pursuing a constructive and cooperative relationship with the airline associations, governments and regulators. On critical industry issues – liberalisation, ownership, capacity planning, regulatory restrictions, and environmental action – ACI defends airports views and strengthens their ability to shape the future of our industry, backing up individual airport actions. ACI offers its members numerous training opportunities, a customer service benchmarking programme, detailed industry statistical analyses and practical publications.

NORTH AMERICA

CAE (TRAINING LOCATIONS WORLDWIDE FOR AB INITIO, COMMERCIAL, BUSINESS AND HELICOPTER)

One Step Ahead

Email: aviationtraining@cae.com – **Tel:** +1 514 341-2000 – **URL:** www.cae.com

CAE is a global leader in modelling, simulation and training for civil aviation and defence. The company employs close to 8,000 people at more than 100 sites and training locations in approximately 30 countries. CAE offers civil aviation, military, and helicopter training services in more than 45 locations worldwide and trains approximately 100,000 crewmembers yearly. In addition, the CAE Oxford Aviation Academy offers training for up to 2,000 aspiring pilot cadets across a global network of 11 flight schools on five continents. CAE's business is diversified, ranging from the sale of simulation products to providing comprehensive services such as training and aviation services, professional services, in-service support and crew sourcing. The company applies simulation expertise and operational experience to help customers enhance safety, improve efficiency, maintain readiness and solve challenging problems. CAE is now leveraging its simulation capabilities in new markets such as healthcare and mining.

CQFA CHICOUTIMI COLLEGE (CANADA)

Serving the Industry Since 1968

Contact: Jean LaRoche, Director of R&D, Continuing Education – **Email:** info@cqfa.ca – **Tel:** +1 514 300-2732 – **URL:** www.cqfa.ca

CQFA began delivering on-demand courses in 1968 from its Montreal campus and currently delivers 50 courses: Check Pilot (TRE), Ground Deicing, Aviation HR, Pilot Selection Systems, Airport Management, ICAO 054, Jet Transition, Multi-Crew, SMS Audits, and an unique program of CAA Leadership Training. CQFA is the world's largest civilian provider of Winter Aviation Survival courses. CQFA's online training program features a comprehensive ramp-to-ramp Operational Performances Course, International Procedures, SMS, High Altitude Flying, Surface Contamination, Aviation Fuel, and CFIT. We deliver training worldwide in English and French. Our unique one-month homestay International Aviation English Program also includes time in the simulator.

ÉNA (NATIONAL INSTITUTE OF AERONAUTICS) (CANADA)

Contact: École nationale d'aérotechnique – **Tel:** +1 450 678-3561 – **Fax:** +1 450 678-7465 – **URL:** www.college-em.qc.ca/ena

The ÉNA (National Institute of Aeronautics) is the largest college-level aeronautical institute in Canada and the only educational institution in Québec that trains technicians in aircraft manufacturing, aircraft maintenance and avionics. The school accepts over 1,000 full-time students each year and over 2,000 technicians in continuing education. It is one of the few schools in Canada authorized by Canada's Department of National Defence to provide aircraft maintenance training to military personnel.

IATA TRAINING AND DEVELOPMENT INSTITUTE (WORLDWIDE)

Developing Human Capital for Tomorrow's Air Transport Industry

Contact: Mr. Ismail Albaidhani, Head of Global Partnership and Learning Innovation, ITDI – **URL:** www.iata.org/training

Canada/USA	France/Italy/Netherlands/Spain/Switzerland/UK	PRC/India/Singapore
Email: training.YMQ@iata.org	**Email:** training.gva@iata.org	**Email:** training.sin@iata.org
Tel: +1 514 8740202 Ext. 3632	**Tel:** +41 22 770 2820	**Tel:** +65 6499 2293

Shifting workforce demographics, talent shortages and skills gaps continue to be shared concerns in the industry. ITDI has the solutions. Our innovative tools and renowned expertise will help you effectively manage your Human Capital at every level. Our total training solutions will help you develop, engage and retain the workforce you need for improved sustainability and performance. Optimize your workforce talent to drive better business performance. For your competitive advantage and success.

PAN AM INTERNATIONAL FLIGHT ACADEMY

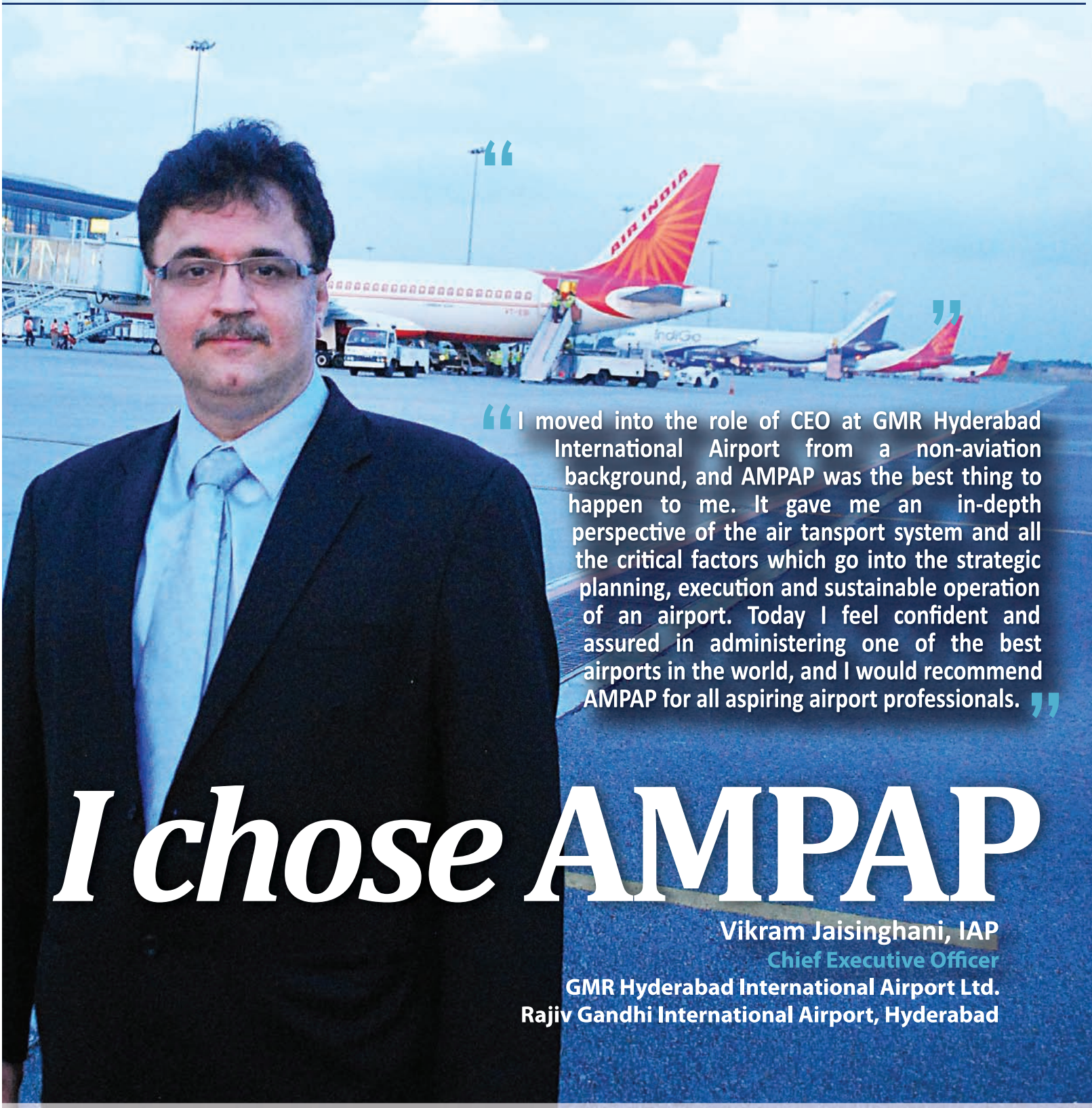
Contact: Gregory Darrow – **Email:** GDarrow@panamacademy.com – **Tel:** +1 303-394-2118 or U.S. 877-394-2118 – **URL:** www.PanAmAcademy.com

Pan Am International Flight Academy is one of the largest and most experienced aviation pilot training organizations, tracing its training heritage back to the earliest days of flight. The company has over 80 full-flight simulators in locations throughout the U.S., with additional training centers in Europe and Asia. They offer a complete menu of training including Type Ratings, Recurrent, Flight Attendant, ATC, Dispatcher, and Maintenance training programs for individuals, airlines, and governments. In addition they provide strategic airline services including Line Training, Flight Crew Leasing, Simulator Leasing, and Delivery and Flight Test services. Pan Am Academy offers 737 type rating training as well as A320 type rating training. We also offer the worlds largest fleet of type rating simulators including the B707, B727, B737, B747, B757, B767, B777, MD-80, DC-9, DC-8, Saab 340, MD-11, DC-10, A300, A320, A330, A340, CRJ-200, CRJ-700 / 900, EMB-170, EMB-190, Cessna Caravan.

INTERNATIONAL AIRPORT PROFESSIONAL

AIRPORTS COUNCIL INTERNATIONAL

Global ACI-ICAO Airport Management Professional Accreditation Programme (AMPAP)



"I moved into the role of CEO at GMR Hyderabad International Airport from a non-aviation background, and AMPAP was the best thing to happen to me. It gave me an in-depth perspective of the air tansport system and all the critical factors which go into the strategic planning, execution and sustainable operation of an airport. Today I feel confident and assured in administering one of the best airports in the world, and I would recommend AMPAP for all aspiring airport professionals."

I chose AMPAP

Vikram Jaisinghani, IAP
Chief Executive Officer
GMR Hyderabad International Airport Ltd.
Rajiv Gandhi International Airport, Hyderabad

Premier Sponsor	Media Partner	AMPAP Administrator	Information
SITA	Air Transport News	AVIATION STRATEGIES INTERNATIONAL	www.iap.aero

NORTH AMERICA

SPRANZA (CANADA)

Future Solutions Today

Contact: Francis G Spranza, MA – **Email:** director@spranza.com
Tel: +772.905.3106 or +772.204.1953 – **URL:** www.spranza.com

Staffed by professionals drawn from: Military Science, Criminal Justice, Psychology, Public Administration, Business, Engineering and Education, Spranza has provided airports, airlines and CAA authorities around the globe with professional in-service training, management consulting and compliance preparation in the fields of: security, emergency response, management and airfield operations.

SOUTH AMERICA

ACADEMIA DE CAPACITACION EN SEGURIDAD Y SERVICIOS (CHILE)

Nuestra Filosofía de Servicio Combina Calidad en la Gestión e Implementación de Programas y Entrenamiento Tanto Presencial Como e-Learning, Conforma a Los Requerimientos de Nuestros Clientes

Contact: Ms. Jacqueline Rodríguez Q., Gerente de Operaciones – **Email:** jacqueline.rodriguez@acass.cl
Tel: +56 2 2332944 – **URL:** www.acass.cl

ACASS Ltda., ha sido creada con el fin de capacitar a quienes requieran de una formación, no tan sólo desde una perspectiva laboral-instrumental, sino que, además, teniendo presente que dicha capacitación debe integrar sólidos principios éticos y sociales que conviertan al trabajador en una persona de alto valor agregado, dentro del ambiente en que se desempeñe y fundamentalmente, en un real aporte al grupo humano en que se encuentra inserto.

ASTECA (MEXICO)

Generando Confianza / Generating Trust

Contact: Arturo Plata Zagal or Jair Marquez Rivas – **Email:** plata@asteca.com.mx or jair.marquez@asteca.com.mx
Tel: 01 800 024 2160 – **URL:** www.asteca.com.mx

Asteca is a Flight School/Flight Training Organization based in Mexico City, that offers ab initio training as well as commercial airplane type ratings, with a focus in the B737 and the A320. Also provides the training for technicians, dispatchers in the same equipments and for flight attendants.

EL INSTITUTO NACIONAL DE AVIACIÓN CIVIL (INAC) (BOLIVIA)

La Excelencia En Educacion Aeronautica Al Servicio Del Pueblo Boliviano

Contact: Mr. Rimort Edson Chavez Araujo, Jefe de Estudios e Instructor Aeronautico – **Email:** dgacbol@gob.bo
Tel: 591 2 2227281 or 591 2 2444450 – **URL:** www.dgac.gob.bo

El Instituto Nacional de Aviación Civil (INAC) es un Centro Educativo de Instrucción Aeronáutica dependiente de la DGAC de Bolivia que forma Profesionales altamente calificados en distintas carreras que demanda la industria aeronáutica nacional. Su Complejo Aeronáutico se encuentra ubicado en la ciudad de Cochabamba, corazón de Bolivia y América del Sur.

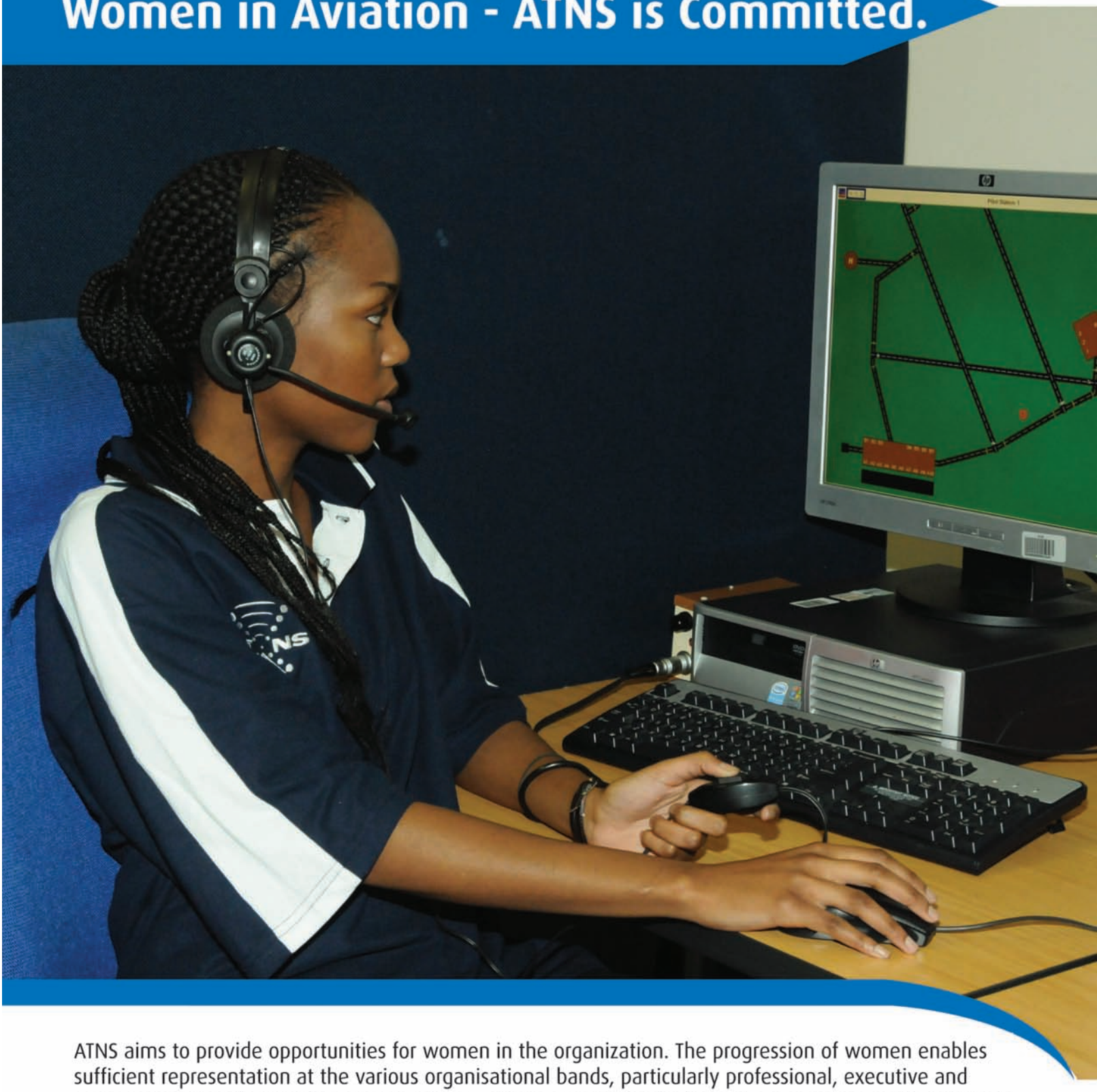
PUNTA DEL ESTE FLIGHT SCHOOL (URUGUAY)

Open Your Wings into the Sky of Uruguay

Contact: Mr. Rodrigo Valetta, International representative – **Email:** r.valetta@puntaflightschool.com
Tel: +46 73 764 7997 – **URL:** www.puntaflightschool.com

Punta del Este Flight School is a flight training center certified by DINACIA (local Civil Aviation Authority) and located in Punta del Este, a well-known summer resort on the Rio de la Plata/Atlantic Ocean coast in Uruguay, South America. We offer all training courses for different air professionals, with a strong emphasis on curricular training, by making sure that the trainee not only goes through the flight training but also all the theory, through planned and coordinated instruction. Featuring several certified instructors with wide experience Punta del Este Flight School guarantees quality education within planned and agreed upon timelines.

Women in Aviation - ATNS is Committed.



ATNS aims to provide opportunities for women in the organization. The progression of women enables sufficient representation at the various organisational bands, particularly professional, executive and management levels. ATNS invests in making a difference within the lives of not only women in ATNS but also the SA community as a whole.

For more information please visit www.atns.co.za

FOLLOW US ON FACEBOOK & TWITTER

AIR TRAFFIC & NAVIGATION SERVICES

ATNS

Unlocking Winning Partnerships

Upgrade your competencies!

Get the IATA internationally recognized qualifications you need to succeed in the aviation, travel and tourism industries.

Give yourself a leg up on the competition for the best jobs by enrolling in one of our courses!

- International Aviation Training programs
- International Travel & Tourism Training programs
- International Cargo Agents Training programs
- Leadership & Management Training Programs

How you benefit from IATA training:

- We train **100,000** young people worldwide every year and give them the skills required to find a job.
- We have over **400** training partners worldwide.
- We have established a highly esteemed Academic partnership with **Harvard Business Publishing, Stanford University, Nanyang Technical University, University of Geneva.**
- IATA has a network of over **70,000** travel agents and 240 airlines who look for IATA graduates when hiring.
- With more than **250 million** job opportunities, we have the highest job placement industry in the world!

STANFORD UNIVERSITY
Stanford Center for Professional Development

HARVARD BUSINESS PUBLISHING

NANYANG TECHNOLOGICAL UNIVERSITY

UNIVERSITÉ DE GENÈVE

Register today: www.iata.org/training/Pages/trainingpartners