

ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION



Vol. 3, No. 1 – June/July 2013

TRAINING REPORT

CONFRONTING THE CHALLENGE

Ensuring adequate numbers of skilled aviation personnel and a safe, secure and sustainable future for global air transport



Special Training Institution
Profile: Indonesia



one step ahead

Complete Pilot Training Solutions

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

CAE provides flexible and customised 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 solutions, 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.



**ICAO TRAINING REPORT
VOLUME 3, NUMBER 1, 2013**

Editorial

Aviation Safety Training Section
Editor-in-Chief: Hervé Touron
Tel: +1 (514) 954-8219 ext. 6314
E-mail: htouren@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 Hervé Touron, Editor-in-Chief at: htouren@icao.int

Opinions expressed in signed articles or in advertisements appearing in the *ICAO Training Report* represent the author's or advertiser's opinion and do not necessarily reflect the views of ICAO. The mention of specific companies or products in articles or advertisements does not imply that they are endorsed or recommended by ICAO in preference to others of a similar nature which are not mentioned or advertised.

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

Copyright © 2013
International Civil Aviation Organization

Printed by ICAO

Contents

3

Message from Mr. Mohamed Elamiri, Deputy Director, Management and Monitoring, ANB, ICAO

Plotting a Path towards Sustainable Air Transportation

4

The Next Generation of Aviation Professionals

Purdue's Dr. Tom Carney and ICAO's Dawn Flanagan provide an historical overview of the NGAP initiative and the progress achieved to date.

10

Inspiring the Young

CMC's Larry Walker shows how model airplanes can offer a springboard for careers in aviation.

14

Hong Kong's Education Path Programme

Thomas Fok of the Hong Kong Civil Aviation Department describes the new Education Path Programme designed and constructed to build awareness of aviation as a career and engage youth.

18

Today's Challenges to Funding Flight Training

Eric Freeman, Executive Vice President for Business Development, Pan Am International Flight Academy notes the significant financial challenges aspiring pilots face and the funding options that are open to them.

22

Learning Innovations: An IATA Brief

IATA's Ismail Albaidhani highlights five learning modes that are changing the training landscape.

25 - STATE PROFILE: INDONESIA

33

Training in a Multinational and Professional Environment

EAMAC Director, Sadamba Tchagbele describes the challenges faced by the ASECNA Schools of Africa and how the organization accommodates a diverse multicultural student population from 18 different countries.

36

Remotely Piloted Aircraft Systems

ICAO's Leslie Cary discusses these new components of the aviation system and what ICAO is doing to ensure their safe and effective integration into non-segregated airspace.

42

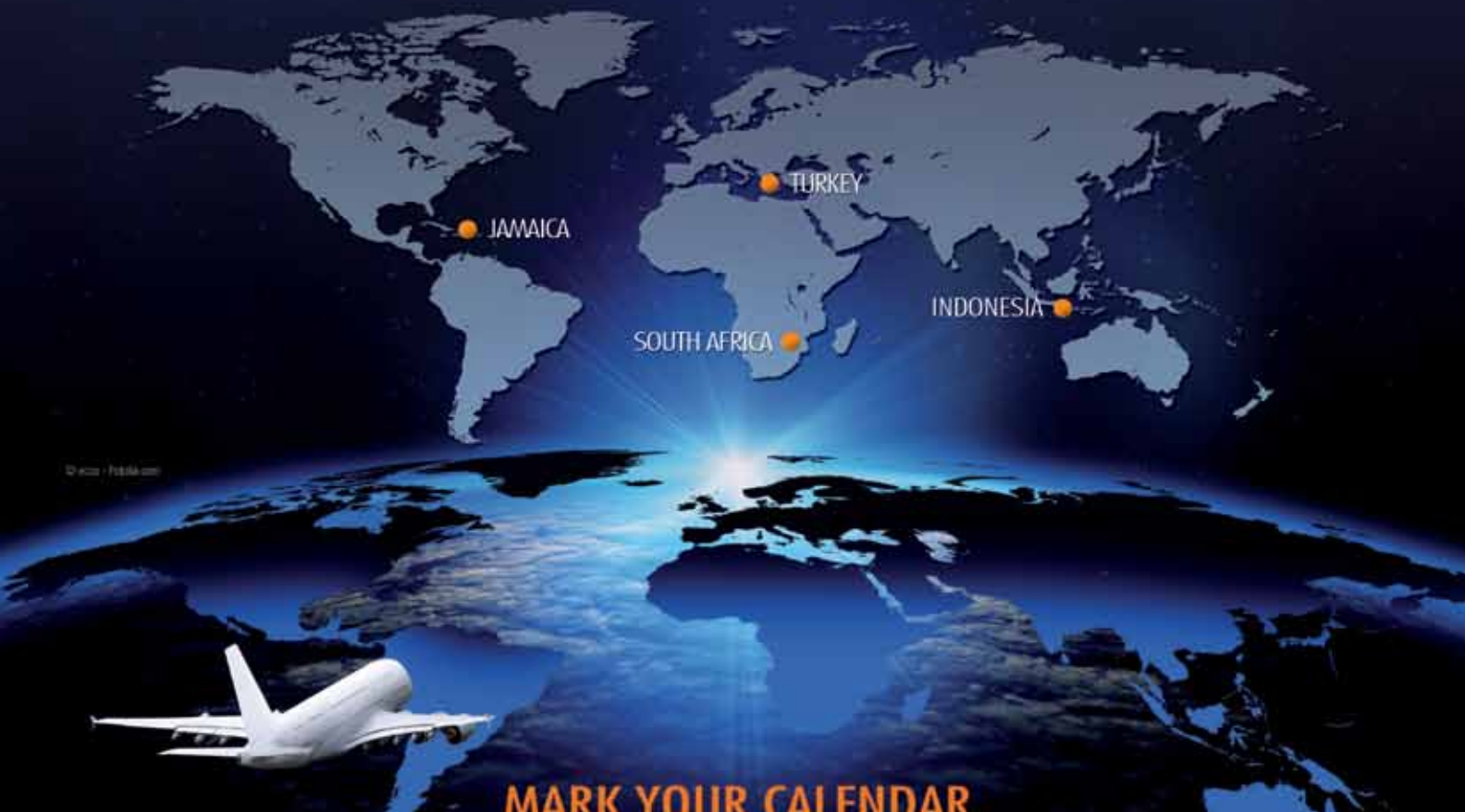
The Value of Debriefing and the Future of Debriefing Stations for the Full Flight Simulator

Felix Ehrentraut of AXIS Flight Training Systems shows how the debriefing station can enhance simulator training.



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

<p>JAMAICA MONTEGO BAY 5 to 7 February 2013 Hosted by: </p>	<p>INDONESIA BALI 23 to 25 April 2013 Hosted by: </p>	<p>TURKEY ISTANBUL 17 to 19 June 2013 Hosted by: </p>	<p>SOUTH AFRICA JOHANNESBURG 10 to 12 December 2013 Hosted by: </p>
---	---	--	---

For more information: www.icao.int/trainairplus

PLOTTING A PATH TOWARDS SUSTAINABLE AIR TRANSPORTATION



✈ For the first time in the history of the air transport industry, there is a very real possibility that we could experience a shortage of qualified aviation professionals such as pilots, maintenance personnel, air traffic controllers and various other professionals if we don't effectively address this issue now. Thus, the

obvious question is: what is the scope of the challenge that lies ahead? Part of the answer can be found in a study published by ICAO entitled *"Global and Regional 20-year Forecasts."*

The premise underlying the survey among States and industry alike is that demand for aviation professionals will be driven by the growth in traffic and by the number of aircraft deliveries. The global air transport network has doubled in size every 15 years since 1977 and, between now and 2030, it will double again. This means that the 2.9 billion airline passengers carried in 2012 will grow to over 6 billion by 2030. In this context, we estimate that the number of commercially operated aircraft will jump from about 62,000 today to some 152,000 in 2030 worldwide. During this same period, we expect the number of aircraft movements to double, from 26 million annually to close to 52 million in 2030.

The implications are clear. We, the aviation community, must ensure that there are enough qualified aviation professionals in every region of the world to support this growth. The ICAO survey indicates a potential global shortage over a 20-year period of 160,000 pilots, 360,000 maintenance personnel and 40,000 air traffic controllers, for a grand total of 560,000 aviation professionals.

Growth, of course, is only one measure of civil aviation progress. As we expand our capacity over the coming years, our greatest priority remains maintaining and improving the safety of air transport operations. Several key challenges have emerged that aviation must address locally, regionally and globally over the next few decades.

One of the most important impacts on human resource development and management in our new millennium is the expansion of high-technology in every major industrial sector. This has led to tremendous competition across all industries for qualified technical personnel.

In addition to this, there is also the demographic challenge of attrition. Clearly, replacing one generation of experienced technical professionals with another is not as simple as upgrading infrastructure or buying new aircraft. We must ensure that attrition-related impacts are properly considered in our recruitment planning strategies.

One of our main challenges is that, with the exception of North America where current training capacity is strong and projected growth will be weakest, we do not currently have enough capacity worldwide to train all of the hundreds of thousands of people needed to fill these positions. Training capacities are also unequal in many regions of the world. Therefore, we need to train more efficiently and address training globally at the international level. Like the safety, security and sustainability of air transport, this is ultimately a global challenge that requires a global solution.

This situation is exacerbated by the difficulties of the global economy; States simply don't have the additional budget to address training capacity and open more training institutions. Training must necessarily be more efficient and cooperation between the States and training institutions must be strengthened.

There is an obvious need to set international standards for the competencies of professional aviation personnel in order to facilitate the mobility of the workforce and allow aviation professionals who are trained in one region to operate in another.

Let us also keep in mind that we must not only train our professionals, we must also hire them. In this, Air Transport is in competition with other industries that may offer higher salaries and better job conditions, where advancement may be more rapid and where the work may not be as demanding.

To address this expected global shortage of skilled personnel, ICAO has set-up the Next Generation of Aviation Professionals (NGAP) initiative with the mission to develop strategies, best practices, tools, standards and guidelines as applicable, and to facilitate information sharing activities that assist the global aviation community in attracting, training, educating, and retaining the next generation of aviation professionals.

The key element of the NGAP communication strategy is the organization of regional symposia in all regions of the globe. These "meetings of minds" provide a unique opportunity to share best practices and experiences, to look at what works and to integrate these tools into a medium and long term plan for dealing with the situation before it becomes problematic.

Whatever difficulties we may encounter, the end result must be a clear definition of the way forward. The future of the industry and its contribution to society are at stake. ■

Mohamed Elamiri

Deputy Director, Safety Management and Monitoring, ANB, ICAO



THE NEXT GENERATION OF AVIATION PROFESSIONALS



ABOUT TOM CARNEY

Dr. Thomas Q. Carney is Professor of Aviation Technology and former department head of the Department of Aviation Technology at Purdue University, where he has taught since 1972. In addition to his extensive flight and academic background, Dr. Carney maintains a courtesy faculty appointment in the Department of Earth and Atmospheric Sciences at Purdue. Dr. Carney serves as Chairperson of the NGAP Task Force, and is a member of the Board of Trustees and former president of the Aviation Accreditation Board International.



ABOUT DAWN FLANAGAN

Mrs. Dawn Flanagan is a Training, Policy and Procedures Officer at ICAO and works as part of the ICAO team that supports the NGAP Task Force. She is involved in various ICAO programmes, including managing the Government Safety Inspector (GSI) Training Programme and the Aviation English Language Test Service (AELTS). Prior to working at ICAO, Mrs. Flanagan was an International Aviation Operations Specialist for the Federal Aviation Administration (FAA) where she was responsible for technical assistance programmes for the Caribbean Region, including leading the FAA's efforts under President George Bush's Third Border Initiative.

AN HISTORICAL OVERVIEW

The Next Generation of Aviation Professionals (NGAP) Task Force is active and pursuing an exciting and important agenda focused on recruiting and preparing the Next Generation for excellence as practitioners within the worldwide aviation workforce. At its meeting in Montréal on January 21-22, 2013, the Task Force reaffirmed the ongoing need for efforts to attract, recruit, educate/train, and support the Next Generation of professionals needed by ICAO Member States to replace retiring individuals and to fill the human resources needs that are projected to exist over the next several decades. The ongoing work of the Task Force is a direct result of the original round-table meeting in May of 2009, hosted by ICAO and IATA from which the NGAP Task Force was conceived and launched.

Since its inception, the NGAP Task Force has had a number of successes. Perhaps most visible was the First NGAP Symposium, held at ICAO on March 1-4, 2010. The symposium was very well attended and extremely successful, and a convening committee of the NGAP Task Force is beginning efforts to organize the Second NGAP Symposium, scheduled to be held in 2014. The convening committee will develop a dynamic agenda of sessions dealing with issues related to attracting the best and brightest new practitioners to aviation careers.

Additional work and successes of the Task Force include three Task Force meetings, four ICAO NGAP and TRAINAIR PLUS regional conferences in 2012, partnering with Halldale at WATS 2012, a 20-year forecast to assist States in quantifying human resources requirements, and a YouTube contest entitled "Aviation: The Future is Yours". Moreover, the Task Force and its working groups (Outreach, Accreditation, ATM, and Flight Crew) have disseminated information on the importance of competency-based training, and finalized competency frameworks for ATM, as well as partnering with the International Pilot Training Consortium (IPTC) for further development of flight crew competencies.

A VISION STATEMENT

Clearly, much has been accomplished since May 2009, but the original issues, concerns, and opportunities that led to formation of the NGAP Task Force continue, and may in fact be even more pressing today. To build on initial successes and chart the way forward, at its January 2013 meeting, the Task Force members in attendance held discussions to formulate a clear and accurate Vision Statement. The NGAP Vision is to have a global aviation community that has sufficient competent human resources to support a safe, secure and sustainable air transportation system.

Although the Task Force had the issues outlined in the vision statement in mind from its inception, this was a significant and focused effort to clearly articulate what we are about. With the Vision Statement in mind, the Task Force members then held

substantive discussions about the NGAP Mission to support the Vision and guide our work in moving forward. The result of those discussions is a new and realistic NGAP mission statement: to develop strategies, best practices, tools, standards and guidelines as applicable and to facilitate information-sharing activities that assist the global aviation community in attracting, training, educating, and retaining the next generation of aviation professionals.

KEY OBJECTIVES

In fulfilling the NGAP Task Force Vision, and pursuing its Mission, it is vital to have clearly-defined and reasonably attainable objectives, deliverables, timelines, and assigned working subgroups. To accomplish this, the Task Force has developed four key objectives:

1. To establish partnerships to support the NGAP Task Force;
2. To assist States and the aviation community to:
 - a. plan mid- and long-term human resources needs, and
 - b. meet the challenges of attracting and retaining the next generation of aviation professionals;
3. To establish a research group for issues monitoring, agenda setting regarding future problems for aviation, including human resource constraints, and comparisons with other industries; and
4. To support the harmonized implementation of competency-based methodologies for those frameworks currently under development.

The members of the Task Force have populated each of the four objectives with deliverables, individuals and subgroups responsible for pursuing them, and a timeline for completion. For example, the first objective seeks to identify partners and resources (in-kind, human and funding), and to develop communication strategies for the NGAP programme. This effort has a completion target of the end of 2013.





First NGAP Symposium held at ICAO Headquarters, March 2010

Objective two includes planning and execution of the Second NGAP Symposium, conducting a number of Regional Forums, production and dissemination of an “aviation careers attractiveness kit”, and other outreach activities related to the NGAP Mission.

The research group envisioned in objective three will have a number of objectives, including identification of ongoing research projects and connecting academia, industry and other stakeholders; formalizing a process to establish internships and research projects at ICAO; developing a mechanism to promote exchange of academic faculty, staff, and graduate students; establishing a reliable data-gathering system and maintaining a high-fidelity forecast of staffing needs for aviation professionals; conducting a feasibility study for developing and maintaining a forecast website for aviation personnel needs and opportunities; promoting the gathering of data through existing mechanisms at regional symposia and other forums; conducting a feasibility study and cataloging the various methods for accreditation and/or assurance of programme excellence in educational programmes for aviation, by ICAO regions and Member States; conducting a feasibility study to determine how the free-flow of professionals across States and regions can be facilitated; and working with students to develop creative ways to engage the Next Generation to identify their “needs” and interests, and the most effective learning styles and activities, by ICAO regions, and reporting this information back to the NGAP Symposium.

Objective four includes development of a first draft of ATC and ATSEP competency frameworks; development of a first draft of an ATC training manual for submission to ICAO; revision of ATSEP training manuals in accordance with the ATSEP competency framework and for submission to ICAO; development of an airport safety competency matrix; and liaison between other ICAO expert groups and their activities related to competency-based training with the NGAP Task Force.

A NEW STRUCTURE

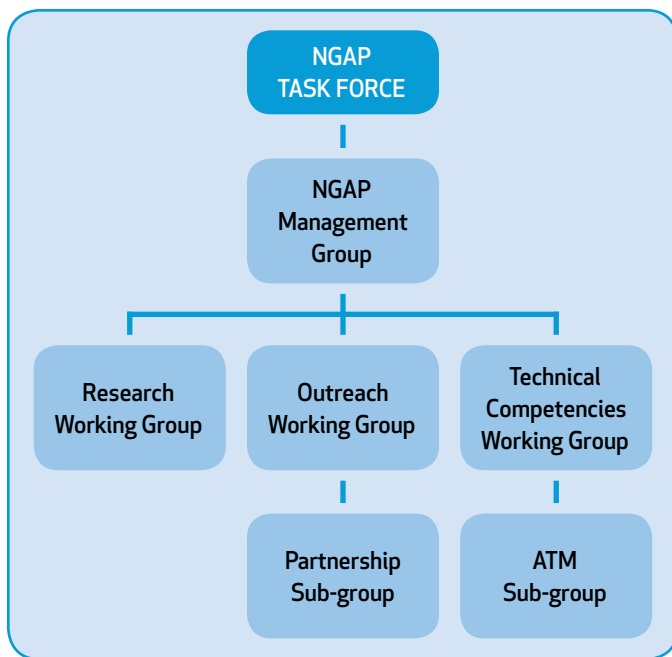
To efficiently carry out the ambitious agenda outlined above, the NGAP Task Force has developed a new structure as shown below in Figure 1 (page 8).

This working structure is designed to maximize effectiveness and continuity of the work of the NGAP Task Force, allowing for open participation from States, associations, training institutions, industry, educators, and other stakeholders. The NGAP Management Group (comprised of the Chairperson of the NGAP Task Force, the three Working Group Chairs, Sub-group leaders, and ICAO) will discuss progress on activities determined by the NGAP Task Force and receive reports on Working Group activities. It is envisioned that discussions of the Management Group will take place

Effective Global Leadership Through Balanced Priorities



Figure 1. NGAP Task Force Working Structure

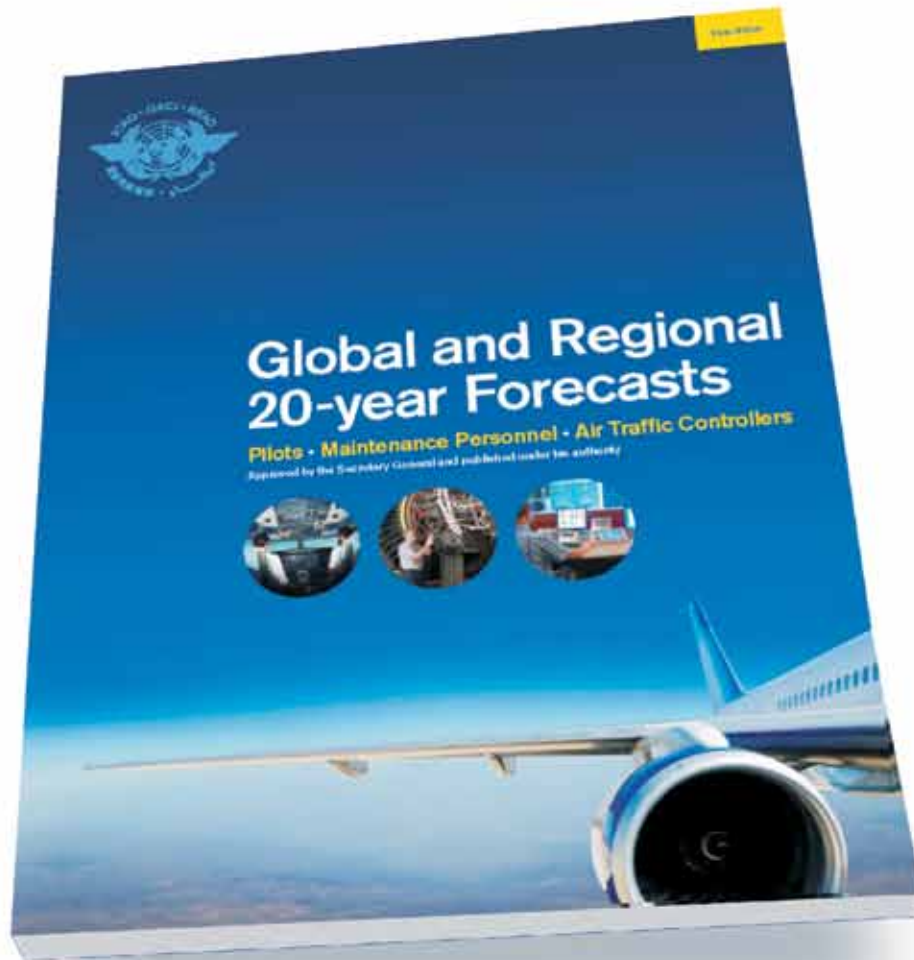


quarterly. In addition, the NGAP Task Force will meet twice a year (once in Montréal, once electronically) to engage in discussions about NGAP issues; identify possible activities to support and/or promote the NGAP programme; discuss new initiatives and issues; determine technical work required and establish ad-hoc technical groups for the development of competencies; disseminate and promote NGAP information (utilizing the ICAO Training Report, regional conferences, symposia, and international meetings); and formalize partnerships in order to support NGAP programme objectives.

The work of the NGAP Management Group will be supported by the three Working Groups: Outreach, Technical Competencies and Research. The Working Groups are, in turn, responsible for implementing the objectives and deliverables established by the NGAP Task Force; managing the activities of any required sub-groups; carrying out any new tasks identified by the NGAP Task Force or NGAP Management Group; and reporting to the NGAP Management Group and/or NGAP Task Force on a regular basis regarding their activities and deliverables.

We believe this is a pivotal time for ICAO Member States and other stakeholders for attracting and preparing the Next Generation of Aviation Professionals to meet the human resources needs of the aviation community throughout the world. The NGAP Task Force is working to find solutions and processes for meeting those needs, and we are excited about the possibilities. We invite readers who are interested in the work of the Task Force to join us in our efforts. ■

Plan your recruiting and training needs
for licenced aviation personnel.
Stay ahead of the curve and your competition.



Now available in all ICAO languages
and at a lower price.

More than two million jobs are projected for pilots, maintenance personnel and air traffic controllers as a result of the retirement of qualified professionals and the anticipated growth of commercial air transport to the year 2030. This ICAO study compares the average number of professionals worldwide that will need to be trained annually with the training capacity of existing facilities. It forecasts a shortfall of training capacity equivalent to 160,000 pilots, 360,000 maintenance personnel and 40,000 air traffic controllers.

Executives of airlines, maintenance, repair and overhaul organizations, aircraft manufacturers, air navigation services providers and civil aviation authorities officials with a professional interest in air transport human resource planning, will appreciate this first edition of one of the fundamental works in the field. Training schools, future aviation professionals, as well as aviation consultants, will also consider it a valuable resource.

Available at:
www.icao.int/store



Contact:
Mihail Peytchev
Telephone: +1 514 954 8219 ext. 7763
E-mail: mpeytchev@icao.int

INSPIRING THE YOUNG

Model Airplanes Offer a Springboard for Careers in Aviation



ABOUT LARRY WALKER

He is an aviation enthusiast. The son of a USAF officer, Larry flew his first radio-controlled model airplane in 1965. Early in his career, Larry worked in avionics for Honeywell and spent most his time in Toulouse on the Airbus A310 and follow-on aircraft programmes. He joined Canadian Marconi as Marketing Manager for advanced communications and navigation avionics in the 1990s. Today Larry and his younger son Eric enjoy flying a variety of radio-controlled aircraft as members of the Toulouse club "Mini-Ailes Blagnacaise" (<http://www.mab.asso.fr>).

✈ Children often like to replicate what their parents do. It is generally observed that, from toy cars to baby dolls and miniature kitchens, playing at parental roles is very much a part of growing up. Not surprisingly, parents who work in the aviation industry have discovered that the toys their children play with can nurture further interest in the field.

Virtually every toy store, even in the most remote areas of the world, sells aircraft models. From the basic planes for young children to the most sophisticated radio-controlled aircraft, toy airplanes offer a hobby, a sport and a pastime to children of every age; even for those over 80!

Model airplanes come in all shapes and sizes. They may be made of plastic, wood or even advanced composites. One can purchase a 20th Century classic, the latest iteration of military or civilian aircraft or models that are imaginatively futuristic. Some are meant for showcases, others for actual flight.

VIRTUAL REALITY

Models that can be built to fly usually generate more passion because of the care and patience required to build them and the training and skills needed to fly them. Unlike the many flight simulation video games that connect to the family television, model airplanes represent a more realistic approach to aviation. They are tangible objects that can be built, tested, programmed and flown. They replicate the aircraft they are modelled after; some of the more expensive models offer the sound of piston engines or turbines, and the smell of gasoline or kerosene.

With today's advances in manufacturing and electronics, flying models have become affordable and may be found at stores for sometimes less than \$50; more sophisticated flying models can be found at specialty stores and on the internet for \$200 or more. In addition, simulators are available now for as low as \$50 with a radio-control panel and appropriate software for the home PC or laptop computer.

Models that can be built to fly usually generate more passion because of the care and patience required to build them and the training and skills needed to fly them.



2013 Course Overview

	Delivery	Registration	Contact
Safety Management			
ICAO Safety Management Systems (SMS) Training Course	Classroom	TGA*	SafetyTraining@icao.int
ICAO State Safety Programme (SSP) Training Course			
ECCAIRS/ ADREP- Technical Course			
ECCAIRS/ ADREP- End-user Course			
Government Safety Inspectors			
Government Safety Personnel - Personnel Licensing (GSI-PEL), Course 18710	Classroom	TGA	SafetyTraining@icao.int
GSI Airworthiness - Air Operator and Approved Maintenance Organization Certification (GSI-Air)			
GSI Operations - Air Operator Certification (GSI-Ops), Course 18700			
GSI Operations - Approved Training Organization Certification (GSI-ATO), Course 18718			
Dangerous Goods			
Dangerous Goods Training Part 1 - Using the Technical Instructions	Classroom	Open to All	SafetyTraining@icao.int
Dangerous Goods Training Part 2 - Training for State Employees			
ICAO FIATA Dangerous Goods Training for Freight Forwarders			
Aerodromes			
ICAO/ ACI Aerodrome Certification Course	Classroom/Online	Open to All	training@aci.aero
Safety Audits			
USDAP Audit Course	Online	TGA	etraining@icao.int
Aviation Medicine			
Aviation Medicine Regional Training	Classroom	TGA	AEvans@icao.int
Performance-based Navigation			
Performance-based Navigation (PBN) Overview Course	Online	Open to all	atminbox@icao.int
Performance-based Navigation (PBN) Air Space Design Course			
Performance-based Navigation (PBN) Operations Approval Course			
Aviation Security			
Airport Security Programme Workshop	Classroom	TGA	isd@icao.int
Basic Course			
Cargo Course			
Crisis Management Course			
Exercise Course			
Instructors Course			
Management Course			
National Civil Aviation Security Quality Control Programme Workshop			
National Civil Aviation Security Training Programme Workshop (NCASTPI)			
National Inspectors Course			
National Screeners Certification Programme Workshop			
Screener Certification Programme Workshop			
Supervisor Course			
Economics and Statistics Courses			
Air Transport Statistics e-Learning Course	Online	Open to All	eap@icao.int
Air Transport Economics and Policies e-Learning Course			
Forecasting for Air Transportation e-Learning Course			
ICAO/ ACI Course on Airport User Charges	Classroom		
Environment			
State Action Plan on CO ₂ Emissions Reduction Activities	Classroom	TGA	environment@icao.int
Executive Programmes			
Global ACI-ICAO Airport Management Professional Accreditation Programme (AMPAP)	Classroom/Online	Open to All	registrar@iap.aero
ICAO-Concordia University Aviation Security Professional Management Course (PMC)			avsec-pmc-cc@msb.concordia.ca
ICAO-Singapore AVSEC Leadership and Management Seminar (LAMS)			saa@caas.gov.sg
Instructional Design			
Training Developers Course (TDC)	Classroom	Open to All	trainairplus@icao.int
Train-the-Trainer			
Training Instructors Course (TIC)	Classroom	Open to All	trainairplus@icao.int
ICAO Safety Management Systems (SMS) Train-the-Trainer course			SafetyTraining@icao.int
ICAO State Safety Programme (SSP) Train-the-Trainer course			SafetyTraining@icao.int

* Through Governmental Authority



A radio-control simulator for home computers

Opportunities to get close to real aircraft operations are more and more limited and parents who would like to share their enthusiasm for aviation with their children cannot do so as freely as in the past. Most of the outdoor observation decks of airports have been closed for security reasons in recent years, in Europe; only Schiphol Airport in Amsterdam still has a terrace that is accessible to the public. Similarly, access to air shows, such as the Paris Air Show, is increasingly limited to aviation professionals. While real airplanes are becoming more and more difficult to see and touch, flying models can put the technologies and principles of real airplanes within reach.



Aviation enthusiasts watching an A380 convoy from behind a fence

DESIGN SOPHISTICATION

Technologies involved in constructing radio-controlled aircraft models are becoming increasingly sophisticated: light-weight materials such as glass or carbon fiber, special purpose glues, metal sheeting and forming, mechanical assemblies, electrical wiring,

power systems, actuators, piston motors and electric motors, propellers and gas turbines are now used on some models. The list of technological innovations appears to be limited only by the imagination of the designers.

Model airplanes also serve as very good technical foundations for the apprentice engineer. Aerodynamic principles are acquired naturally as the beginner usually experiences failures in his or her early models and, little by little, learns about the why's and how's of what keeps an airplane in the air, such as lift, centre of gravity, wings dihedral, airspeed fundamentals and more. In other words, they learn the hard way!

SKILLS DEVELOPMENT

Flying models, like flying itself, is generally fun. But it does require focus and can become stressful as conditions vary and circumstances differ. Model flying is much the same as flying an actual aircraft in the real world but very rarely with the dramatic consequences of a failure of equipment or error in judgement. As such, this is an ideal way to help teenagers enhance their skills, remain focused and apply safety rules.

Because there are no passengers in these flying models, radio-control pilots enjoy flying aerobatics: they might first attempt loops, then rolls, fly inverted, perform an Immelmann (Max Immelmann 1890-1916) or other fighter style manoeuvres. Apart from having fun, these "pilots in waiting" also develop skills to recover from unusual attitudes; the best of them will often join a local team and possibly develop their passion to a level where they qualify for national and international competitions.

An excellent entry point for competition is to join a model airplane club if there's one available nearby. Getting together with experienced modellers is stimulating; beginners can find authoritative sources of advice and training; they may also have access to infrastructure such as assembly tables and miniature runways. Experienced modellers who are often involved in aviation are usually willing to share their passion and professional expertise.



Getting ready to start a piston engine

Model airplanes are also ripe for experimentation. Today's smaller UAVs are often derivatives of model gliders or helicopters. Miniature electronics based on MEMS-sensor technology have enabled advancements in gyro stabilization (such as the AS3X™ from E-flite) while GPS modules can navigate a model over a pre-programmed flight plan. GPS modules can also record a number of parameters for later replay on the home computer.

A BIRD'S EYE VIEW

Video can add fun too. Pixel-based cameras can be used for aerial views, and video cameras can be connected to radio transmitters and provide real-time imaging so that the pilot can have a remote visualisation of the flight as if he or she were sitting in the cockpit.



A model glider large enough to hold a camera system

APPRECIATING HISTORY

One other important aspect of model airplane flying is that it promotes the history of aviation. Scale models can be highly detailed, inspiring youngsters to research the era in which these aircraft were created and flown. The history of each plane, the motivation of the pilots and manufacturers and the related scientific progress in airframes, engines, pilot instruments and navigation aids, armament and flying techniques are more readily available than ever before through the internet.



A model of the famous Stinson Reliant of the 1930s

Flying model airplanes is more than a simple leisure activity. It is a way to approximate the challenges and pleasures of flying. Many aspiring pilots dream of flying a Spitfire, a Mustang, a Spad, a Corsair, an airliner or a helicopter. With radio-control modelling they can have an early start, better identify themselves with their legendary heroes and learn the principles of flight long before they are able to join the aviation community as adults.



Identifying with aviation heroes of the past

PROMOTING THE PASSION

Supporting model airplane flying can effectively be one of the tools to attract more youngsters to aviation. By facilitating model airplane activities, from building to flying, young people can be shown how attractive aviation can be. However, it takes adult involvement to bring the imagination of these prospective aviation professionals to life. Developing model airplane flying in your area will stimulate young people towards an aviation career and nurture the growth of aviation and our economy. ■

Model airplanes
also serve as very
good technical
foundations for the
apprentice engineer.

HONG KONG'S EDUCATION PATH PROGRAMME

Engaging the next generation of aviation professionals



ABOUT THOMAS FOK

He is a Senior Electronics Engineer in the Hong Kong Civil Aviation Department (CAD). He worked as one of the key project members in the airport relocation from Kai Tak to Chek Lap Kok in the early 1990s and the subsequent implementation of CNS/ATM systems in Hong Kong. Two years ago, he was posted to the Training and Development Office. The main responsibilities of this new office are to enhance staff competence, and formation of departmental training policies and programmes for career development and human resources planning.

✈ Hong Kong International Airport (HKIA) is located less than five hours flight time from half the world's population. It is the busiest air cargo gateway and one of the ten busiest passenger airports. In 2012, HKIA handled 56.5 million passengers, 4.03 million tonnes of cargo and 352,000 flight movements. The airport is connected to some 170 destinations worldwide through more than 100 airlines.

With the anticipated growth in air traffic, the aviation industry faces many challenges. While continuous efforts are being made to enhance airport capacity to meet the growing demand, there is a need for a robust education and training infrastructure to support the growth of the various sectors of aviation.

A NEW CHAPTER FOR THE HONG KONG CIVIL AVIATION DEPARTMENT

To support the sustainable development of aviation in Hong Kong, the Civil Aviation Department (CAD) of Hong Kong, China initiated a plan in 2005 to construct a new headquarters complex, including a new air traffic control centre. With the support of the aviation community and the collective efforts of all parties involved in the project, the construction of the CAD Headquarters was successfully completed in 2012.

One of the main design features of the new CAD Headquarters is the incorporation of an Education Path. The objective of this important feature is to enhance awareness of aviation within the general population, engage youth and stimulate interest among this new generation in aviation as a career. Considerable efforts have gone into the planning and design of the Education Path to make it an attractive showcase for the general public and an inspiring exhibit of aviation for young people.



About the new Civil Aviation Department Headquarters

This US \$250 million complex commissioned in 2012 is mainly comprised of three interconnecting blocks: the Air Traffic Control Building, the Regulatory & Training Building and the Accident Investigation & Facilities Building. It features a state-of-the-art ATC system, a library-cum-resource centre, an auditorium for conferences and seminars with a seating capacity of 200, and the Education Path where visitors can learn more about Hong Kong's aviation industry.

INSPIRING THE PUBLIC THROUGH EDUCATION

The Education Path concept stemmed from a general perception that citizens in Hong Kong may not have ready access to knowledge related to aviation such as airport development, aircraft design, air traffic management, aerodrome operations, etc. The Education Path is designed to provide an engaging visitor experience that showcases the functions and vision of the CAD while, at the same time, underlining its significant contribution to Hong Kong's aviation industry.

A dedicated task force was set up to brainstorm ideas on the exhibits to be displayed in the Education Path so as to make the best use of the total gross floor area of about 400 square metres within the CAD Headquarters. The exhibits on display were designed based on the principle that "education is not the filling of a pail but the lighting of a fire". As well, the main theme of global cooperation and teamwork is pervasive, as issues relating to aviation safety, security and environmental protection are global issues that must be tackled collaboratively at the global level.

Since the target audience is the general population, the task force decided that the exhibits along the Education Path should aim to generate interest among visitors with a wide variety of backgrounds. Consequently, the Education Path was

configured into three different sections, each with a particular theme for the exhibits in each section. The first section provides the visitors with a general overview of Hong Kong's aviation history and the principal functions of the CAD, the second section focuses on aviation safety, and the third section provides basic information on air traffic management, accident investigation and sustainable development.

Theme Section 1 – "Hong Kong Civil Aviation - Together We Fly"

The first section of the Education Path is strategically located at the ground level of the Regulatory & Training Building. It serves to introduce the visitors to the history of aviation development in Hong Kong from its original vocation as a fishing village some 100 years ago to its development into a regional transport hub today, as well as the key role the CAD has played in this evolution. Through its photo gallery, visitors can witness the various phases of aviation development in Hong Kong, including a series of milestone events: the first powered flight in Hong Kong in 1911, official establishment of the CAD in 1946, overnight relocation of the HKIA from Kai Tak to Chek Lap Kok in 1998, and commissioning of the new CAD Headquarters in 2012.

At the entrance to the Education Path, visitors are treated as aircraft passengers about to land at the HKIA. Aided by sound

The Civil Aviation Department (CAD) is a strong advocate of youth outreach on aviation and has developed a number of programmes to encourage the participation of young people.







ICAO Asia Pacific Sub-Regional Aviation Security Training Centre (ASTC)
AVSEC Management • Crisis Management
Cargo Security • Instructors • National Inspector

IATA Affiliated Regional Training Centre
Management of Aviation Security
Aviation Internal Auditor • Cargo Security
In-flight Security • Airport Security Operation
Senior Management of Aviation Security

Aviation Security Academy
Advanced AVSEC Management
Behaviour Pattern Identification
Regulated Agent Regime (RAR)
In-flight Security • Passenger Profiling

**ICAO Asia-Pacific Sub-regional Aviation Security Training Centre
Aviation Security Academy, HKSAR, China**
1 Cheong Yip Road, Hong Kong International Airport, Lantau, Hong Kong
Tel: (852)3925 5500 Fax: (852)3925 5525
E-mail: academy@avseco.com.hk http://www.avseco.com.hk



effects, narration and a display of photographs and exhibits on the work of the CAD and its industry partners, visitors come to appreciate the message that “behind an air-ticket, there are many different organizations that play a part in bringing passengers safely to their destinations.”



The main entrance creates the sensation of flying

Theme Section 2 – “Safety & Security in Air Travel”

Obviously, some visitors will be eager for more in-depth information on other aviation disciplines. The second section located on Level 2 of the Regulatory & Training Building is designed to provide technical knowledge on how aviation safety is ensured throughout all phases of a flight. It includes an overview of the design requirements of an aircraft; how an aircraft is produced from the design stage to the final test flight; and how continuous airworthiness is assured through regulation by the CAD.

A leisurely walk through this section of the Education Path provides visitors with an appreciation of how the various organizations work together to bring passengers safely from one place to another. In the middle of the tour, videos on a wall-mounted TV show how an aircraft is built and the various tests it must undergo to achieve aircraft type certification. The narrations and schematic diagrams further elaborate on the safety features included in the design of the critical components of an aircraft as well as the inclusion of self-checking functions to perform safety checks on aircraft systems on a continuous basis.

In addition to an aircraft cabin mock-up, the following exhibits and video presentations are available to visitors in this section to increase their awareness of aviation safety:

- Dangerous goods and restricted articles in air travel
- Aircraft structures and materials
- Aircraft engine operation
- Aircraft cabin design and safety features
- Aircraft emergency features and provisions



The cabin mock-up showing safety features in cabin design

Theme Section 3 – “Pursuit of Excellence in Aviation”

The third section of the Education Path is located on Level 2 of the Air Traffic Control Building. Its theme deals with the provision of air traffic control services to flights within the Hong Kong Flight Information Region (FIR). Visitors are given hands-on experience in managing arrivals and departures of aircraft in the vicinity of the airport. This part of the Education Path is equipped with a viewing gallery which provides visitors with an overview, through the glass windows, of the new 820 square metre Air Traffic Control Centre (ATCC) so that they can experience how air traffic controllers work around-the-clock in the operational centre. To present visitors with more comprehensive knowledge of the air traffic control operations in the CAD, exhibits on display in this section include air navigation charts depicting the Hong Kong FIR, aerodrome simulator, radar simulator and mock-ups of the next generation Air Traffic Control consoles.



Animated footage of a flight based on data retrieved from Digital Flight Data Recorder

At designated locations in this section of the Education Path, there are also exhibits relating to accident investigation and the sustainability of aviation development. The display at the accident investigation corner includes a genuine black box, a Digital Flight Data Recorder (DFDR) playback system, and animated footage of a flight involved in an accident.

To address the topic of sustainability in aviation development, environmental features of the new CAD Headquarters (a large proportion of greening areas, solar-powered lighting, lightpipes and photovoltaic panels) are highlighted. A number of green exhibits show how the four pillars of the aviation industry (airlines, aircraft maintenance, air traffic services and the airport) have contributed to protecting the environment. These exhibits convey the message that minimizing the impact of aviation on the environment remains one of the major challenges for the aviation industry.

REACHING OUT TO THE COMMUNITY

A team from the CAD's volunteer staff has been trained as qualified tour guides to provide on-site explanations and to interact with visitors to enhance their understanding of various subjects. Within the first six months following its soft-opening in October 2012, the Education Path Programme (EPP) has attracted over 2,000 guests from nearly 120 organizations and the comments from visitors have been very encouraging. In recognition of the importance of the Education Path, ICAO was cordially invited to witness its commissioning. On 28 January 2013, ICAO Secretary General, Mr. Raymond Benjamin and the Director General of Civil Aviation (DGCA), Mr. Norman Lo jointly officiated at the opening of the Education Path.



ICAO Secretary General, Mr. Raymond Benjamin (right) and DGCA, Mr. Norman Lo (left) officially open the Education Path

The CAD is a strong advocate of youth outreach on aviation. It has developed a number of programmes to encourage the participation of young people. One of these activities is to provide training to interested members of the uniformed youth organizations to allow them to become qualified tour guides for the Education Path.

The Education Path is designed to provide an engaging visitor experience that showcases the functions and vision of the CAD while, at the same time, underlining its significant contribution to Hong Kong's aviation industry.

STAYING AHEAD

Beyond the current set-up, the CAD has initiated a plan to develop a cyber Education Path Programme (EPP) for the benefit of a larger population. Features including but not limited to video footage, still images and other multimedia elements such as sound effects, narrations and texts will be incorporated in the cyber EPP. The virtual tour will also include interactive features allowing users to play and participate in aviation related games and online quizzes.

Profound changes are taking place within the aviation industry at a more accelerated pace than ever before due to globalization and technological advancement. In recognition of this trend, the CAD intends to remain a step ahead and to establish long-term plans to enhance the Education Path. In the next phase of development of the Education Path, the CAD plans to introduce the new and future technologies, taking into consideration the ICAO Aviation System Block Upgrade initiative. ■

TODAY'S CHALLENGES TO FUNDING FLIGHT TRAINING



ABOUT ERIC FREEMAN

He has been in the flight simulator industry for over 15 years. He joined Pan Am International Flight Academy in 1999 as Executive Vice President where he oversees business development. Mr. Freeman began his career in aviation as the result of taking over a family business in the early 1970s which required frequent travel. Mr. Freeman obtained his pilot's license and purchased a plane to meet these business obligations.

✈ All of us are aware of the extreme pilot shortage that is now upon us. In many regions of the world, this shortage of pilots will have serious economic and social consequences as airlines park airplanes that should be producing jobs, profits and taxes.

In the past, there were many avenues for a candidate to raise money to pay for training such as bank loans or government guaranteed loans. There were financial institutions that would lend money for flight training, but since the 2008 world economic crisis, many banks will no longer fund this type of training.

These days, any barrier to becoming a pilot must be examined and, where possible, reduced or removed completely to allow access to flight training. Financing flight training is, at best, challenging and, at worst, a dead end pursuit for many flight training candidates. With total training costs reaching over \$100,000 USD to become a commercial pilot, many potential aviators are finding it very difficult to impossible to find funding. Today, we need to resort to creative solutions for flight training financing. These creative solutions will have to come from multiple sources including private institutions or persons, government programmes and even the airlines themselves.

In recent years, there have been few private financing options for pilots. Banks and lending institutions have become increasingly reluctant to loan money for flight training. Even with a co-signer and/or exceptional credit scores, most financial institutions have refused to write loans for flight training. Recently though, there have been signs that this credit drought may be easing. In the United States, Sallie Mae Student Loan (www.salliemae.com) is working with flight training institutions to issue loans to their students.

PERSON-TO-PERSON

Arranging for a loan from family or friends can be another way to pay for training. Those who have a direct interest in the candidate's success may loan the money at a better interest rate than a bank. There is also a growing trend toward person-to-person loans. Lending sites such as Lending Club (www.Lendingclub.com) and Prosper (www.Prospers.com) match flight students who need small loans with personal lenders. Pilot Finance (www.PilotFinance.com) is another private lending company that focuses on loaning money for flight training. Students can apply for a



Putting the best future imaginable on the wing.
It's in our power.™



See what propels the futures of major and regional airlines, business aircraft, helicopters, and military aviation worldwide. Learn more at www.pw.utc.com.



Pratt & Whitney
A United Technologies Company

With total training costs reaching over \$100,000 USD to become a commercial pilot, many potential aviators are finding it very difficult to impossible to find funding.

loan that will be disbursed as the student progresses through their course of study. This organization limits pilot financing risk by disbursing the money directly to the flight school as the student progresses through his or her training stage checks.

GRANTS AND SCHOLARSHIPS

As well, there are a number of government and public supported funding programmes for students. These funding options can take the form of grants, scholarships or federally guaranteed student loans. Many of these programmes are underutilized because they are difficult to locate and apply for. But, with a little effort and awareness, flight training candidates can acquire a significant amount of government financial support.

Many scholarship programmes and private grants are available to prospective pilots. The specific requirements for scholarships and grants differ from programme to programme, but most are open to students from around

the world. For example, the Ninety-Nines (www.Ninety-Nines.org) and the Woman in Aviation (www.WAI.org) offer flying scholarships to potential female pilots. Scholarships and grants can vary from just a few hundred dollars to complete funding of a pilot's training. More information on flight school scholarships and grants is readily available by searching online. A quick internet search for Flight Training Scholarships will produce many current flight training scholarship and grant programmes.

TITLE IV INSTITUTIONS

Guaranteed Student Loans are federal government backed loans that are offered to students of aviation colleges, universities and accredited flight schools. Colleges and universities that participate in federal financial aid programmes are called Title IV schools. Title IV schools can offer many types of federal loan and grant programmes, including Pell Grants, Direct Loans, and Perkins Loans. University financial aid counsellors can assist a student when applying for these loans, making the process less difficult. Accredited flight schools can also qualify for Title IV student funding.

Flight academies normally offer accelerated training that allows pilots to finish flight training in less than twelve months. Title IV flight academies are usually approved to offer the same programmes as those of Title IV colleges and universities. However, not all flight academies are approved to offer Federal Title IV programmes for student loans and grants. Students should research the academy to see if they are approved for these options before enrolling. For more details regarding federal Title IV programmes that can help pay for flight training and education, students should visit (<http://studentaid.ed.gov/types>). For pilot candidates that have served in the military, the GI Bill can be a great source of flight training funds: (www.gibill.va.gov/resources/education_resources/programs/flight_training.html). These funds are only offered to veterans attending a Veteran's Administration approved flight school.





AIRLINES

As airlines continue to grow and acquire more airplanes, it is obvious that more has to be done to provide aspiring pilots with access to flight training through creative sponsorships such as airline cadet programmes and direct entry training. These are programmes where the airline will hire a non-pilot and will either

directly sponsor a flight training candidate or guarantee his private loans. The pilots are extensively pre-screened by the airline, given the opportunity to receive flight training and, if successful, are hired by the airline as a direct entry first officer.

Many of these airline programmes are administered in cooperation with a Flight Academy such as Pan Am International Flight Academy (www.PanAmAcademy.com) or CTC Aviation (www.CTCaviation.com). Airlines such as British Airways, EasyJet and All Nippon Airways have used these types of programmes to assure a volume of high quality pilots for their first officer positions. The programmes also benefit students by providing funding that will lead to an airline first officer position.

Obviously, entrance into these programmes is extremely competitive due to the limited number of available slots. However, given all of the aircraft scheduled to be delivered to airlines in the next 20 years, for airlines to staff their cockpits, there will need to be more airline sponsored flight training programmes.

It is clear that a severe pilot shortage is upon our industry. These are just a few options for students to fund and ultimately achieve their goal of becoming airline pilots. ■



We Create Airline Pilots

Introducing Our New Professional Pilot Training Program

Pan Am International Flight Academy is known for training Airline Pilots from all over the world. Now let us train your cadets like we train your Airline's Pilots. Our FAA and EASA approved courses incorporate all of our experience into an Advanced Professional Pilot Program that not only gives your pilots more basic and advanced ground training and flight time but also incorporates 50 hours of Full Motion Simulation and Airline Emergency Training.

Pan Am Where Airlines Train their Pilots.

PanAmAcademy.com

800-394-2118 Int'l. +1 303-394-2118





ABOUT ISMAIL ALBAIDHANI

He 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. 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.

LEARNING INNOVATIONS: AN IATA BRIEF



CHANGING THE WAY WE LEARN

The fast-paced, ever-changing nature of the global aviation industry represents a moving target when it comes to training. In this environment, the need to maximize the return on investment demands both more efficient and more effective (smarter) approaches. Innovation holds the key to achieving both, by changing the way we learn.

The experiences of organizations within and outside the industry illustrate how five key learning modes are being used in novel ways.

1



LEARNING APPS

As the use of tablets and smartphones grows, learning apps are rapidly evolving. Using the Electronic Flight Bag (EFB), airlines like **Air Canada** can deliver technical and other content to pilots on their mobile devices. **Southwest Airlines** is exploring an airport code flashcard app for students and a post-class app enabling instructors and students to stay in touch. Among OEMs, **Boeing** supports its engineers with a Workplace Coaches portal featuring access to tools, social media and an expert locator. Elsewhere, the **IATA Training and Development Institute (ITDI)** continues to expand its portfolio with more mobile-accessible content.

2



SOCIAL LEARNING

Social learning is another evolving area. **IBM** uses Wikis, blogging, LotusLive, and IBM Connections to foster inter-organizational learning, feedback and sharing of best practices. **Intel** initiatives, using Sharepoint, intranets, blogging and other tools, include communities of practice for various professionals and a social computing platform (PlanetBlue) with Wiki functionality that facilitates thousands of groups. At **ITDI**, an innovative partnership with **Harvard Business Publishing** gives students access to on-demand, skill-specific leadership training via **Harvard ManageMentor (HMM)**. The collaborative platform enables students to exchange and learn from shared experiences.

3



USE OF VIDEOS IN LEARNING

Live and recorded video can play a significant role in organization learning, enabling access to on-demand expertise, enhanced classroom presentations, webinars, and even nano-coaching. **British Petroleum** incorporates video in many types of get-togethers, from classes and townhalls to meetings with remote offshore assets. Through an **IATA-Stanford University** partnership, industry professionals worldwide have 24/7, on-demand access to IATA's video-enabled distance learning aviation certification program.

4



GAME-BASED LEARNING (GBL)

Another form of social learning, GBL has proven highly effective in helping learners to absorb and retain information. The gaming heritage of companies like Sony has led to mobile learning platforms that enable the delivery of content that is more dynamic, cost effective and flexible. In the aviation industry, CAE's simulation and training expertise integrates game-based approaches to take learning to the next level.

5



CLASSROOM OF THE FUTURE

The classroom of the future – physical or virtual – also holds tremendous potential for collaborative learning and networking. Enabled with state-of-the-art infrastructure and technology, the future classroom will be borderless, connecting students globally, irrespective of location.

What does this mean for the future of learning? All of these approaches hold considerable potential on their own merits. However, no single approach will yield the levels of efficiency and effectiveness the industry needs to succeed. By combining and integrating multiple elements and platforms, we can build collaborative, blended learning solutions to drive improvement in both human and organizational performance. ■



TRAINAIR PLUS

A GLOBAL NETWORK OF TRAINING CENTRES*

North America / Central America The Caribbean

Canada

The ASI Institute, A Division of Aviation Strategies International**

Central America

Instituto Centroamericano de Capacitación Aeronáutica (IDCAE) 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 (CIASA)**

Trinidad and Tobago

Civil Aviation Authority (CAA) Civil Aviation Training Centre (CATC)

United States of America

Federal Aviation Administration (FAA) Academy
Washington Consulting Group, Inc. Technical Training Group

Europe

Belgium

Wallonie Aerotraining Network (WAN)

France

Centre Français de Formation des Pompiers d'Aéroport (CFPPA)

Germany

Aviation Academy International (AAI)

Ireland

Dublin Airport Authority (DAA) Aviation and Aerodrome Centre of Excellence

Italy

ENW Academy

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 Aviation Academy**

United Kingdom

NATS Training and Simulation

Middle East / Asia / Pacific

China

Capital Airports Holding Management Co., Ltd. (CAHM)

Egypt

Egyptair Training Center

India

Civil Aviation Training Centre Allahabad**

GMR Aviation Academy

Indian Aviation Academy

Indonesia

Air Transport Human Resources Development Centre (ATHRDC)

Iran

Civil Aviation Training Centre of Iran (CATC)

Japan

Aerospace Safety College (ASC)**

Jordan

Queen Moara Civil Aviation Technical College (QNCATC)**

Mongolia

Civil Aviation Training Centre of Mongolia (CATC)

Nepal

Civil Aviation Academy (CAA) of Nepal

New Zealand

Airways New Zealand

Qatar

Qatar Aeronautical College (QAC)

Republic of Korea

Incheon Airport Aviation Academy (IAAA)**

Singapore

Singapore Aviation Academy (SAA)**

Sri Lanka

Airport and Aviation Services of Sri Lanka - Training Centre

Thailand

Civil Aviation Training Centre of Thailand (CATC)

United Arab Emirates

Gulf Centre for Aviation Studies (GCAS)**

Yemen

Civil Aviation and Meteorology Institute

South America

Brazil

Agência Nacional de Aviação Civil (ANAC) Instituto de Controle do Espaço Aéreo (ICEA)

Columbia

Corporación Educativa Indoeamericana (CEI)

Ecuador

Escuela Técnica de Aviación Civil (ETAC)

Paraguay

Instituto Nacional de Aeronáutica Civil (INAC)

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)

Tanzania

Civil Aviation Training Centre (CATC) of Tanzania

ICAI
CURUG

ATSA
SURABAYA

ATSA
MAKASSAR

ATSA
MEDAN

ATO
PALEMBANG

ATO
JAYAPURA



MINISTRY OF TRANSPORTATION
HUMAN RESOURCES DEVELOPMENT ON TRANSPORT AGENCY
AIR TRANSPORTATION HUMAN RESOURCES DEVELOPMENT CENTRE



**INDONESIA AVIATION
TRAINING CENTRE**

ICAO NGAP & TRAINAIR PLUS REGIONAL SYMPOSIUM 2013

BALI, April 23rd - 26th 2013



ICAO NGAP & TrainAir Plus symposium 2013



Air transportation HRD centre as a TrainAir Plus associate member



The opening ceremony of Indonesia-ICAO developing countries training programmes by the Vice Minister of transportation

Air Transportation Human Resources Development Centre (ATHRDC) is a government organization which is part of Human Resources Development on Transport Agency, Ministry of Transportation of the Republic of Indonesia. Its main task is to develop human resources in the field of air transportation.

Established in 1974, with the name of Civil Aviation Training Centre (CATC) Indonesia, it was mandated to generate and develop qualified aviation personnel in order to provide safer, more secure and more comfortable air services in accordance with national and international required standards and regulations. This was initially realized through a single training institution at Curug.

Due to the vast size of the Republic of Indonesia as well as the increasing needs for aviation personnel, the Indonesian government concluded that one aviation training institution

was not sufficient. In 1989, the Minister of Communications decided to establish five new Regional Civil Aviation Training Centres (RCATCs) across Indonesia located in Medan, Palembang, Surabaya, Ujung Pandang, and Jayapura.

As a result of changes to regulations and policy as well as the development of air transportation in Indonesia, the Civil Aviation Training Centre (CATC) of Indonesia became the Air Transportation Human Resources Development Centre (ATHRDC) of Indonesia in November 2010 and part of the Human Resources Development on Transport Agency. The tasks and the duties of the ATHRDC have also been expanded.

These changes are also followed by the government training institutions under the coordination and the supervision of the ATHRDC, namely the Indonesian Civil Aviation Institute (ICAI) of Curug, the Aviation Technical and Safety Academy



The President of the ICAO council, Roberto Kobeh González, visits the Indonesian Civil Aviation Institute of Curug

(ATSA) of Makassar, the Aviation Technical and Safety Academy (ATSA) of Surabaya, the Aviation Technical and Safety Academy (ATSA) of Medan, the Aviation Training Office (ATO) of Palembang, and the Aviation Training Office (ATO) of Jayapura.

We train unskilled people through to diplomas and licenses. There are many challenges we must face lately due to the rapid growth of the Indonesian aviation industry which offers opportunity to the younger generation of Indonesia to dedicate their lives to it. Even today, the aviation industry, not only in Indonesia but all over the world, is experiencing a lack of aviation professionals.

As a manpower supplier, our aviation training organizations are committed to fulfilling the market demand for aviation professionals, making Indonesia a priority. But our ultimate goal is to supply aviation professionals to the world by evaluating, modifying, improving, and developing our training systems, starting from recruitment through to the training system to meet the standard competencies. We also realize that all of the resources we employ are nothing without the spirit of making worldwide aviation better. That is why; the training system not only focuses on developing and improving skill and knowledge, but also attitude. Discipline is one of our concerns. You cannot handle the traffic if you fail controlling yourself. We teach our cadets not only how to fly the aircraft, how to control the airspace and how to fix the aircraft, but we also form them with mental abilities and appropriate attitude.

The Air Transportation Human Resources Development Center operates a boarding school. The training programmes conducted are short courses and ab-initio training from Diploma 1 up to Diploma 4 training programmes. The ab-initio students are called cadets, and for helping and monitoring cadets, each school principal appoints special staff called as Counselors.

The education and training programmes conducted can be divided into four training departments, namely:

1. The Pilot training department consists of fixed wing pilot training programme, rotary wing pilot training programme, and flight operation officer training programme.



2. The Aviation Safety training department, consists of the Air Traffic Control (ATC) training programme, the Aeronautical Information Services training programme, the Aeronautical Telecommunication training programme, and the Airport Fire Fighting training programme.



3. The Aviation Technical training department consists of the Aircraft Maintenance training programme, the Air Telecommunication and Navigation training programme, the Airport Electrical training programme, the Airport Mechanical training programme, and the Airport Building and Runway training programme.



4. The Aviation Management training department consists of the Aviation Management training programme, the Airport Operation training programme, and the Aviation Administration training programme.



The Indonesian Civil Aviation Institute (ICAI) of Curug was the first pilotschool in Indonesia and has trained thousands of pilots both from within and outside Indonesia. The ICAI conducts Diploma I through Diploma IV training programmes

and mandatory training courses. It has four training departments: Pilot Training, Aviation Technical Training, Aviation Safety Training and Aviation Management Training.

The Rotary Wing Training programme trains cadets how to fly rotary wing aircraft such as the Bell 206 helicopter. The Fixed Wing Training programme trains cadets how to fly the Boeing 737 and the Airbus 320, and the cadets of the Flight Operations Officer (FOO) programme are trained in planning and arranging flight schedules, flight routes, luggage capacity, passengers and other aircraft operations. ICAI has a 60 unit fleet consisting of 11 Beechcraft Sundowner C23s, 8 Piper Dakota PA 28-236s, 17 Socata TB-10s, 3 Beech Baron B58s (twin engine), 18 Piper Warrior IIIs (glass cockpit), and 3 Bell Ranger 206B helicopters.

Aviation Technical and Safety Academy (ATSA) of Medan is the largest aviation academy in Sumatera. This academy has an Aviation Technical Training Department and an Aviation Safety Training Department which are not only developing and improving the knowledge and competencies of aviation personnel, but their attitudes as well. The Aviation Technical Department consists of an Air Navigation and Telecommunication Engineering training Programme and an Airport Electrical Engineering training programme.

Due to the increasing number of “required systems” in aviation, the aviation educational and training system is facing the challenge of developing the management and technology to satisfy both internal and external requirements. To do so, the aviation education and training systems must be networked into one fully integrated system to provide Web-based learning and a long-distance learning system.

Based on the above, ATSA of Medan has a new tool to support the aviation education and training system, known as the Medan Future Integrated Aviation Training System (MFIATS), which provides relevant data and information from the industry.

The basic concept of MFIATS is that all of the supported training system in ATSA of Medan will be integrated. To reach the full MFIATS, ATSA of Medan has taken some initiatives, such as adding a new simulator with new technology (aerodrome control tower simulator with airport lighting system, AMSC laboratory for operators and engineers), computer based training for theory and ground school, etc. At present, ATSA of Medan is developing and improving all aspects of MFIATS support.

The Aviation Technical and Safety Academy (ATSA) of Surabaya is expected to participate in the road map to zero accidents through the development of human resources in the air transportation sector by generating competent and competitive aviation professionals.



It also has a vision to be an aviation training provider which generates world-class aviation professionals who are competent and competitive both nationally and internationally.

The ATSA of Surabaya has an Aviation Technical Training Department, Aviation Safety Training Department, Aviation Management Training Department and the new Pilot Training Department developed by the Air Transportation Human Resources Centre which conducts non-diploma, fixed wing pilot training.

The Aviation Technical and Safety Academy (ATSA) of Makassar is also a governmental aviation training provider under the coordination and supervision of the Air Transportation Human Resources Development Centre. This Academy has two training departments, namely the Aviation Technical Training Department, and the Aviation Safety Training Department.

The Aviation Technical Training Department consists of the Air programme, the Airport Electrical Engineering training programme, the Airport Mechanical Engineering training programme, the Aircraft Maintenance training programme, and the Airport Building and Runways Engineering training programme.

The Aviation Safety Training Department consists of the Air Traffic Controller, Aeronautical Information Services training programme and the Flight Services Officer training programme.

Besides conducting diploma training programmes, our institutes and academies also conduct mandatory short courses and tailored short course training programmes.

The Aviation Training Office (ATO) of Palembang and the Aviation Training Office (ATO) of Jayapura are training providers under the coordination and supervision of the Air Transportation Human Resources Development Centre



Inauguration of Intergrated Campus (aviation, maritime, land transportation) by the Minister of Transportation in Makassar, South Sulawesi





which conduct short courses for aviation human resources to improve the air safety, security, and on-time performance.

The missions of these training offices are to improve and to develop the competencies of aviation personnel in accordance with national and international standards by conducting training, recurrent training and tailored training that match customer needs.



Training programmes conducted in these aviation training offices include airport management, aviation security, computer engineering, aviation search and rescue and firefighting, CNS/ATM, ICAO English Language Proficiency, airport operators, aviation knowledge, aircraft marshaling, airport construction and runway, dangerous goods, etc.

Indonesia's impressive economic development is driving rapid growth in the aerospace sector and the commercial aviation system. Indonesia has emphasized its commitment and consistency to enhance cooperation and to play an active role in worldwide aviation, especially in developing human resources. Some recent steps that have been taken by Indonesia are as follows:



1. an agreement with Boeing in 2011 which included transfer of technology, counter trade and opening a research and development centre in Indonesia;

2. cooperation with ICAO in 2012 for institutional strengthening of the ICAI to increase the capacity of CNS, Air Traffic Management and a Quality Management System;

3. becoming a TRAINAIR Plus Associate Member in 2012, and the intention to become a TRAINAIR Plus Full Member by this year;

4. hosting international aviation events, such as the Regional Indonesia Aviation Training & Education Conference 2012 (IATEC), Asian Aviation Training & Education Summit 2013 (AATES), ICAO Next Generation of Aviation Professionals (NGAP) and TRAINAIR Plus Regional Symposium 2013.

5. conducting ICAO-Indonesia Developing Countries Training Programmes (IIDCTP) since 2012, which will become an annual Indonesian programme.

The Air Transportation Human Resources Development Centre intends to improve the training capacity in Indonesia by establishing new pilot schools still in study at Riau Island, Sumatera island and Sulawes, and by developing a new training programme at ATSA of Makassar - the Aircraft Maintenance training programme.



Integrated graduation (aviation, maritime, land transportation graduates) by the Minister of Transportation



Indonesia-ICAO developing countries training programmes

AIR TRANSPORTATION HUMAN RESOURCES DEVELOPMENT CENTRE



ATHRDC
Komplek PLP Curug, Tromol Pos 06 Curug
Tangerang 15810, Banten - Indonesia
e-mail : info@catc-indonesia.org
website : catc-indonesia.org

INDONESIA CIVIL AVIATION INSTITUTE - CURUG
JL. RAYA PLP CURUG TANGERANG 15001
www.stpicurug.ac.id

AVIATION TECHNICAL AND SAFETY ACADEMY -
MEDAN JL. PENERBANGAN NO. 85
JAMIN GINTING
www.atkpmedan.ac.id

AVIATION TECHNICAL AND SAFETY ACADEMY -
SURABAYA JL. JEMUR HANDAYANI 1/73
SURABAYA 60236

AVIATION TRAINING OFFICE -
PALEMBANG JL. ADI SUCIPTO NO. 3012
TALANG BETUTU PALEMBANG 30155
www.bpp-pnb-palembang.net

AVIATION TRAINING OFFICE - JAYAPURA
JL. KAYU BATU NO. 6 TANJUNG RIA JAYAPURA
PAPUA 99117
www.bpp-pnb-jayapura.net

TRAINING IN A MULTINATIONAL AND PROFESSIONAL ENVIRONMENT: EAMAC addresses Africa's unique aviation training challenges and opportunities



ABOUT SADAMBA TCHAGBELE

He was born in 1958 in Sokode, Togo. He is a Civil Aviation Engineer with an Air Traffic Control background. He held the following position: Instructor in a Training Organization, Director General of an Airport Management Company prior to becoming Representative of ASECNA (ANSP) in Togo, Head of Airport and Overflying Charges Billing Services (ASECNA Headquarters, Senegal). Since August 2006, he has been Director of the Training Organization called EAMAC in Niger. He is the co-author of Professional English for Air Traffic Controllers, co-published with MM Yves RENGADE, Jeremy MELL and Joel MOLAC for ASECNA.

✈ The Agency for Aerial Navigation Safety in Africa and Madagascar (L'Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar - ASECNA) is an Air Navigation Service Provider (ANSP) that was created on a cooperative basis on 12 December 1959 in St Louis, Senegal, and is comprised of 18 countries of which 17 are African States. All Member States agreed to pool their resources (airspace, financial resources, human resources, etc.) and entrust management to one single entity called ASECNA. Very soon, the need to provide Member States with qualified staff arose and it was decided to create three schools to fulfill this purpose. These schools are located in Senegal, in Cameroon and in Niger. The one in Niamey, NIGER, is called the African School of Meteorology and Civil Aviation (Ecole africaine de la météorologie et de l'aviation civile - EAMAC).

EAMAC

Founded in 1963, EAMAC now has 50 years of experience in training. Here, men and women are trained and retrained in various fields of aviation for different positions in the African Member States' aviation authorities and service providers including ASECNA, the airports and the airlines. Non-Member States such as Rwanda, Burundi, Sao Tome, Guinea, Cape Verde and Djibouti have also trained and retrained at EAMAC from time to time. Algeria, Tunisia and Morocco have also sent participants for meteorology refresher courses.

One can imagine the multinational environment created by 20 to 24 different nationalities living together during training. This environment brings together different cultures, official and local languages and striking differences in national education systems that set different requirements for a given level of education and/or training.

Workforce planning for more than 50 ATS units in different States and managing expertise, jobs and careers requires exceptional flexibility.



(from top to bottom) Met observation park, EAMAC main entrance, ab initio student hostels

EAMAC also provides training in meteorology, electronics and computer sciences (ATSEP - Air Traffic Safety Electronics Personnel), in Air Transport and in Air Navigation for different levels of competency. While training is mainly in French, specific courses are also provided in English.

From the outset, ASECNA clearly understood the need for a strong curriculum, up-to-date programmes, competent teachers, solid infrastructures, laboratories for practical simulations, particularly for professional schools and a quality management system. By pooling resources, these criteria were fully met at EAMAC. It is one of the very few training organizations in Africa that offers 32 classes, 27 laboratories, more than 60 permanent instructors and hostels for 350 students in initial training and for 800 participants in refresher courses yearly. Another key element in the success of EAMAC is the accurate selection of candidates.

THE CHALLENGES FACED BY EAMAC

Before school

The first challenge is to conduct a selection of candidates that is in line with the needs expressed by the users. Recruited candidates should fully satisfy the prerequisites to successfully undergo the training and ultimately satisfy customer expectations. Sometimes, the school will help to fine-tune the needs definitions and expectations of its clients. This assistance may prove challenging in some years. Likewise, and because the demand may be higher than the supply, there may be a need to apportion the annual capacity of the school among users before organizing an entry examination. Catering to a large and diverse customer base is one of the greatest challenges that the school faces.

Selection of candidates

Organizing entry examinations sessions can be very tricky for the school. Each year, sessions are held in May on the same day for 17 different States. The times designated to begin and to complete the examination remain the same for all. But because candidates live in different time zones, constraints are such that, while Madagascar and Comoros candidates are comfortable with the time at which the examination begins, Senegal candidates must wake up very early to avoid being late. The situation becomes the opposite for the time at which the examination is terminated for the candidates located at these two ends of the continent: those taking the exam in Madagascar and Comoros are uncomfortable because the examination finishes very late. However, there are no complaints from candidates located in States in the central part of Africa.

Test administration monitoring

Another major challenge is monitoring the examination itself. Regulations governing the administration of examinations may differ from one State to another. Tests must take into account the fact that candidates may be from a French, Spanish or Portuguese speaking State or from bilingual States (English and French or French and Arabic).

Catering to a large and diverse customer base is one of the greatest challenges that the school faces.

Scholarship issues

Candidates who pass are awarded scholarships prior to attending the school. Scholarships may be provided by: aviation authorities, service providers, national offices for scholarships or international organizations. The amounts of these sponsorships vary greatly, depending on the States or organizations that offer them.

During their stay

Rallying the school to be on time is also a challenge when we consider the broad geographical distribution of the States across many time zones.

Once they arrive at EAMAC, it becomes obvious very quickly that students have come to the institute with differences that constitute new challenges for themselves and for the school: culture, behaviours, language, education systems and so on. These differences also include culinary habits. Depending on the African

region from which they originate, student cooking and eating habits may be totally different. Even though students are all from Africa, feeding them requires their full involvement in the process.

Flexible financial and human resources management

Workforce planning for more than 50 ATS units in different States and managing expertise, jobs and careers requires exceptional flexibility. On the other hand, having instructors of different subjects on the same campus is cost-efficient and does promote cross-border service and research initiatives. Students also acquire teamwork awareness very early in their training and their exposure to a multinational environment exposes them to a cooperative and concerted approach to their future professions. Socializing each and every day causes students to know each other better and promotes real friendships that will last beyond their stay at school. This particular point is paramount in the successful coordination of activities locally and beyond national borders for the professional positions these students will ultimately assume.

OPPORTUNITIES

Diploma recognition

Upon completion of their studies, students are awarded a diploma that is recognized in all Member States and even far beyond. This recognition is the starting point for potential movement of staff to States other than their own whenever and wherever their expertise is needed. Sharing of expertise among Member States reduces the risk of brain drain tremendously. For ASECNA, airspace is seamless, and so, too, should be the provision of services and the use of human resources. For aviation industry staff, the opportunity to work abroad is something exciting and motivating.

Harmonization

From the service provider standpoint, training in the same organization offers a unique opportunity to harmonize practices for staff who will be employed across the entire continent, who will work in coordination with one another and from whom the same high level and quality of service will be expected.

While the challenges are many, the rewards are tangible. The multinational, multicultural environment is motivating for students, stimulating for the school and profitable for future employers whether they be States, service providers or other stakeholders.

One of the most exciting moments at EAMAC is the cross-cultural week that culminates with the exhibition that students organize each year. Souvenirs from the home States of the students are proudly displayed while local music, dance and national dishes are prepared by students dressed in their often spectacular local attire. The idea is to enrich one another with differences that might otherwise be a source of profound difficulties.

Working towards aviation safety and security, one must not forget the central role of human resources. The more we succeed in harmonizing practices from the outset, the more efficient our system will be. ■



Radar ADS simulator

REMOTELY PILOTED AIRCRAFT SYSTEMS

Focus on Training



ABOUT LESLIE CARY

She is a Technical Officer in the Air Traffic Management Section of the Air Navigation Bureau at the International Civil Aviation Organization (ICAO) and is Secretary of the ICAO Unmanned Aircraft Systems Study Group. As Secretary, she is responsible for coordinating all developments related to unmanned aircraft systems (UAS) / remotely piloted aircraft systems (RPAS) within the ICAO framework. This includes working with Technical Panels, Study Groups and relevant external bodies on development of Standards and Recommended Practices which will establish the basis for global interoperability and harmonization of RPAS.

✈ Civil aviation has, to this point, been based on the notion of a pilot operating the aircraft from within the aircraft itself and, more often than not, with passengers on board. Removing the pilot from the aircraft raises important technical and operational issues for the aircraft, the aviation system and the personnel involved, the extent of which is being actively studied by the aviation community and ICAO.

Remotely Piloted Aircraft Systems (RPAS) are a new component of the aviation system, one which ICAO, States and the aerospace industry are working to understand, define and ultimately integrate. These systems are based on cutting-edge developments in aerospace technologies, offering advancements which may open new and improved civil/commercial applications as well as improvements to the safety and efficiency of all civil aviation. The safe integration of Remotely Piloted Aircraft (RPA) into non-segregated airspace will drive new career paths for those individuals looking to be involved in this quickly evolving field of aviation.

Before investigating the new career paths and related training issues, it is important to understand the context of this new field. A remotely piloted aircraft is, first and foremost, an aircraft. It can be an aeroplane, a rotorcraft, an airship, ornithopter or glider. It can be land, sea or amphibian. It can have propellers or jet engines; it may be battery powered or solar powered. It may be piloted from on board one day and remotely piloted the next. Whatever the type, category, size or power source, it is an aircraft and is therefore subject to the full breadth of aviation regulations.

What sets RPA apart from other aircraft is the fact that the cockpit is no longer on board the aircraft¹. The RPA's cockpit, referred to as a Remote Pilot Station (RPS), can be as simple as a handheld tablet or as complex as a multi-console suite resembling the flight simulator of a transport category aircraft.

The remote pilot may be positioned in a field watching the RPA continuously in order to manage its flight trajectory and maintain adequate separation from other aircraft, obstacles and hazards using a tablet or small joystick for control. Alternatively, the remote pilot may be seated at a console inside a building thousands of kilometres away from the aircraft using a keyboard and mouse and satellite links to transmit control instructions to the aircraft.

¹ Some aircraft may be 'optionally piloted', having both an on-board cockpit and a remote pilot station.



TURKISH AVIATION ACADEMY

Your Global Training Partner



- › *EASA 147 Approved Training Organisation*
- › *IATA Trainings*
- › *Aviation English*
- › *Flight Phobia Programme*

www.thyaviationacademy.com
aviationacademy@thy.com

TURKISH AIRLINES 

A STAR ALLIANCE MEMBER 



Regional
Training Partner



Authorised
Training Center

edexcel 
Approved Centre



TRAINAIR
PLUS

Most RPA will have pre-programmed flight profiles that are executed automatically; however, the aircraft must still be monitored continuously by the remote pilot who has the ability to effect changes to the trajectory on a real-time basis. RPA that can remain airborne for days at a time may be piloted by multiple remote pilots-in-command who may be on shift work at the same location or on opposite sides of the world.

Maintenance personnel may need to take a remote pilot station out of service for maintenance while the RPA is airborne and then return it to service later in the day. In the interim, the RPA must be connected to a second RPS. Handovers from one RPS to another will require new types of interactions between remote pilots as well as between the remote pilots and their RPSs.

All of the above scenarios are new to the civil aviation system - the regulators, the operators, the remote pilots and maintenance personnel. How the people in the aviation system perform their work in these scenarios and what training will be needed in order to meet the challenges that will be encountered is being debated in many arenas. Detailed licensing, training and medical requirements are still a few years away. However, much can be inferred from existing requirements for manned aviation once the context of RPAS is understood.

As already indicated, the full breadth of aviation regulations apply to RPAS and therefore to the individuals who work with them. At least two new types of personnel will be engaged with RPAS: remote pilots and RPA observers and, possibly, RPAS or RPS maintenance. Each will have training, knowledge and skills that must be mastered and, at least in the case of the remote pilot conducting international operations, a licence is mandated.



REMOTE PILOTS

Like pilots of manned aircraft, remote pilots must comply with the laws, regulations and procedures of those States in which operations are conducted. The remote pilot-in-command will have responsibility for the safe conduct of the flight and will need to comply with the rules of the air. In order to meet these responsibilities, the remote pilot will need knowledge of air law, general knowledge of remotely piloted aircraft systems, flight performance, planning and loading, human performance, meteorology, navigation, operational procedures, principles of flight and radio-telephony. As well as the traditional areas of knowledge, the remote pilot will need a thorough understanding of the interaction between the RPS and the RPA.

Human performance issues will be quite different from those of traditional pilots in that the remote pilot won't have the sensory cues available to indicate changes in the aircraft performance or operating environment. Alternative means for the remote pilot to monitor the status of the RPA will be needed if the aircraft is to be permitted to operate alongside manned flights in non-segregated airspace.

The remote pilot will have to demonstrate all the skills required of a traditional pilot, such as the ability to recognize and manage threats and errors, operate the RPA within its limitations, exercise good judgment and airmanship, etc., but doing so from the RPS. Furthermore, he or she must have the ability to speak and understand the language used for aeronautical radio-telephony communications.

Training is integral to developing the knowledge and skill necessary to obtain a remote pilot licence and to maintaining the privileges granted. In many cases, this training will be available through approved training organizations which will have to meet the training requirements established by the National Licensing Authority. The type and extent of training will certainly be correlated to the type and complexity of the RPAS and the type and complexity of the operations to be conducted.



Leadership and Vision in Global Civil Aviation



RPA OBSERVER

An RPA observer is defined in ICAO Annex 2 — *Rules of the Air* as “a trained and competent person designated by the operator who, by visual observation of the remotely piloted aircraft, assists the remote pilot in the safe conduct of the flight”.

Depending on the complexity of the operation, the amount of training required to ensure the competency of the RPA observer will vary. If the remote pilot and RPA observer are standing side-by-side in a field with the RPA within clear visual range, the complexity factor may be very low. Conversely, if the RPA observer is relaying instructions via radio to the remote pilot who is located elsewhere, the complexity factor may increase dramatically.

The RPAS operator must evaluate the complexity of the operation and the responsibilities to be assigned to the RPA observer and ensure the training and competency of the individual will be commensurate with the responsibilities. This training could take many forms and, if deemed necessary by the civil aviation authority, involve specific training requirements or even a licence.

AIRCRAFT MAINTENANCE (RPAS)

As with manned aircraft, RPA must be airworthy to operate. However, unlike manned aircraft, various components of the

system which allow the aircraft to fly do not ever leave the ground. These components must still meet operational standards and must be approved for use. All components of the RPAS (e.g. the RPA, RPS, catapult) will have to be certified and maintained in a manner equivalent to that for manned aircraft.

Personnel who conduct this maintenance, and especially those who certify the aircraft, parts thereof or other components as airworthy (or equivalent) after an authorized repair or modification, must have the knowledge, experience, training and skill appropriate for the specific RPAS.

Approved training organizations can be expected to introduce training courses tailored to meet the maintenance requirements established by the National Licensing Authority, once such requirements have been developed.

CONCLUSION

Full transparent integration of RPA into non-segregated airspace and at aerodromes will take many years to achieve. Provisions are being developed that will increase the ability of the air navigation system to accommodate and eventually treat RPAS as equal partners. The individuals involved in operating, piloting and maintaining RPAS today are contributing to this development process and are leading the way for their successors who will be able to take advantage of an exciting, new career path. ■



TRAINAIR
PLUS

Aviation Training Directory

The world's leading reference on aviation training providers

Consult or register your training centre today!

www.icao.int/td



Identify the trends. Optimize your planning.



The ICAO Global Air Transport Outlook (GATO) to 2030 summarizes the latest and most expansive passenger and freight traffic forecasts ever produced by ICAO. Designed to help regulators and the aviation industry respond to evolving passenger and shipper needs over the next 20 years, the publication also includes forecasts of corresponding aircraft movements and extended global

forecasts of passenger and freight traffic to 2040, in support of greenhouse gas emissions analyses.

This unique document benefits from an expanded system of routes and more sophisticated econometric techniques, as well as the worldwide expertise of ICAO and the extensive data provided by its Member States.



Available at:
www.icao.int/store

THE VALUE OF DEBRIEFING AND THE FUTURE OF DEBRIEFING STATIONS FOR THE FULL FLIGHT SIMULATOR



ABOUT FELIX EHRENTRAUT

A life-long aviation enthusiast, Felix holds a Masters degree in Aeronautical Engineering. He was responsible for flight simulator and ATC simulator development at the university and worked for several aviation companies while he was still a student. He joined AXIS Flight Training Systems in 2010 and is responsible for reference aircraft and simulator testing, organizing and conducting flight simulator certification processes, general research and development and modeling aircraft systems. He is also a pilot.

✈ Flight training is about acquiring and improving skills and knowledge. In order to get the best results, every training session must be conducted in the most effective way. The effectiveness is influenced by factors including simulator capabilities, training materials, instructor skills, the mindset of the pilots and willingness to commit to the training, company culture, training schedules and regulatory guidelines.

On the technical side, the focus for improving effectiveness has, in the past, been on the fidelity and realism of flight simulators and the simulated flight experience. With the realism and technical development of simulators now at a very high level, new areas for improving training are opening up, such as completely integrated training programmes with pre-planned sessions from briefing to debriefing of the simulator flight, including the use of recording and replay devices.

THE NEXT LEVEL OF TRAINING EXPERIENCE

In many recent discussions and interviews with professionals throughout the industry (including instructors, pilots and training programme managers) it was found that existing debriefing stations are currently used only very rarely, mostly due to their limited functionality, which does not meet training needs, and also due to their complexity.

This reflects the fact that in today's digital world, with modern flight simulation devices and training aids capable of recording and replaying every detail, one can become overwhelmed by the huge amount of data and information available. However, if one applies the view that every problem is an opportunity in disguise, this huge amount of detail can be the key to creating the next level of training experience.

The most important improvements and changes emerging from this wealth of available data and computerization are automatic simulator session analysis, the pre-selection and preparation of data for debriefing, customization of this process for the company and pilot and the ability to deploy these powerful tools easily and intuitively.

In a modern flight simulator, using the latest software development, the instructor is assisted in supervising the technical part of flight and can shift much of his valuable human attention to crew-related issues. Algorithms automatically detect, analyze and prepare the right set of information for use in debriefing.

Deviations in any flight parameters can be measured against defined standards and with tolerances of magnitude and duration. Special data sets are pre-selected for analysis with armed or activated malfunctions on the IOS. Procedural behaviours, like checking that certain switches were used in the right sequence within a defined timeframe after a certain event or situation, can also be monitored. The severity of the detected events is categorized and ranked automatically, and the associated data pre-selected for review and presentation at the debriefing station.

COMPREHENSIVE DATA GATHERING

Analytical features in the debriefing include an animated representation of the entire cockpit, charts and graphs with flight path and event information, several flight deck camera recordings and digital sketch pads to make quick explanatory notes right there on the replay displays. These features and all additional data or analysis tools can be selected for display at any time, but not all available data and tools are displayed at once by default, as this could be too confusing and overwhelming, hindering the debriefing and thereby diminishing the positive effects of the training. Nevertheless, all events, and the whole training session in every detail, are always available to the instructor and to the pilots for replay during debriefing.

Just as on the modern flight deck, automation in flight simulators and debriefing stations can relieve humans of some of the tasks and free up capacity to focus on the more important and crucial issues. Still, the whole system is accessible at all times and all of the data is always available, if needed.

A debriefing station is a versatile and highly sophisticated technical aid which further enhances the efficient and effective training of commercial pilots, reducing instructor workload while maximizing learning efficiency.



AXIS simulator exterior

A modern debriefing station is most effective when embedded in an overall training concept, including CBT, FTDs, briefing tools, session planning tools and flight simulators of all types and levels. In an integrated training concept, pre-selected, company-specific training tasks affect the information presented in the briefing, the automatic flight monitoring in the simulator and the pre-selection of data for the debriefing as well. Using these combined features can help to ensure a company-wide standard for the most common training tasks, as all instructors and pilots are guided during training in the same way. This also provides the means to create specific evidence-based or competency-based training tasks for any crew or pilot.

CUSTOMIZED DEBRIEFING

AXIS full flight simulators are used by many different airlines and aircraft operators, so the emphasis when developing simulators and tools is on ready customizability. This lets the flight simulator operator schedule the training sessions of different airlines in sequence, giving each customer their preferred simulator and briefing/debriefing settings. Changing settings may also be necessary between sessions of different types (e.g. type rating or recurrent training) or for individual training for each flight crew according to competency-based/evidence-based training concepts. Especially in corporate aviation, with several business jet operators (and also individuals) training on the same simulator, quickly changeable and adaptable settings are required.

Intended to be used by both instructors as well as pilots, a modern debriefing station is a helpful tool for both instruction and facilitation. It contributes to the classic "show and tell", but also guides discussions and encourages pilots to express their opinion on events during the preceding simulator session. Therefore, debriefing stations are designed for easy and



AXIS simulator interior



AXIS debrief station

intuitive use by everyone involved, without having to read a manual or attend an introductory course. This gives everyone the ability to show additional information and details when making a point during debriefing. Being able to quickly present any desired information visually has a positive effect on knowledge sharing and creates a common ground for discussion. Furthermore, it greatly affects a company's safety culture and raises awareness of the importance of everyone's contribution, not only during simulator sessions, but also in day-to-day airline operations.

SELF-REFLECTION, CONSTRUCTIVE CRITICISM

Once they become familiar with debriefing stations, pilots find that self-reflection and constructive criticism, combined with easy visualization of any desired information, provide a guide to self-improvement as well as details on where their current deficits may lie. It challenges them in a playful way to focus on this self-improvement in particular areas or tasks of their profession.

Dismukes, Jobe and McDonnell state with regard to debriefing, instructor techniques and crew participation (NASA Technical Memorandum 112192, NASA Ames Research Center, 1997): "The rationale for crew-centred debriefings is that adults learn and remember more when they participate actively and make their own analyses rather than when they listen passively to someone else's. Active participation in the debriefing requires the crew members to process the information more deeply, enabling them to draw upon that information more readily and more effectively in a wide range of line situations."

The shared contribution to the debriefing also reflects in the layout and design of the training aids. AXIS Flight Training Systems debriefing stations are controlled through a basic remote control device for simple replay commands, and by tablet PCs and digital sketch pads for detailed event and feature selection as well as for drawing and making notes, which are available to both instructor and pilots.

EASE OF USE

In general, the time available for debriefing is limited, so the training effect should be maximized, while the effort in terms of time and money must be minimized. The goal is to give as much valuable feedback as possible. Therefore, the debriefing station is designed so that no time and effort need be wasted on controlling and using it, much less on programming it. It is usable instinctively and helps to debrief effectively and efficiently. The preparation of event sets and training tasks before the simulator session is also quite easily accomplished with the assistance of true user interfaces that do not require deep system knowledge. The development, operation and maintenance engineers of these new training tools are the only ones who face any real need to master them in-depth.

Once they become familiar with debriefing stations, pilots find that self-reflection and constructive criticism, combined with easy visualization of any desired information, provide a guide to self-improvement as well as details on where their current deficits may lie.

ULTIMATE VALUE

From an economic point of view, a debriefing station is not expensive but very effective. It does not require a great deal of maintenance, nor does it need to be certified as a simulator does, and it is made with standard "commercial off the shelf" (COTS) computer hardware. This reduces cost and creates value beyond what can be measured in figures and numbers.

A debriefing station is a versatile and highly sophisticated technical aid which further enhances the efficient and

effective training of commercial pilots, reducing instructor workload while maximizing learning efficiency. It is applicable to a wide range of training tasks from core flying skills to Crew Resource Management.

Debriefing stations are achieving great acceptance among pilots and CEOs alike. While this clever, new approach to training may seem to be learning through play, this is a concept which all of us have come to appreciate at some point in our past. ■



AXIS Flight Training Systems GmbH
A-8403 Lebring, Phillipsstrasse 27, Austria
phone +43 (0) 5 9889-0, fax -115

We share one goal:
**Enhancing the
safety of flight**

AXIS Full Flight Simulators

Advanced quality, reliability, fidelity
Easy to operate, easy to maintain
Tailored to your high demands
Added value for your training

www.axis-simulation.com

“A human being does not attain his full heights until he is educated.”

Horace Mann

The ATNS Aviation Training Academy is proudly educating the brightest young minds in South Africa to provide the full range of air traffic services, technical support and related services. It is our vision to be a major contributing partner towards ensuring aviation safety in Africa, through our training efforts. We are committed to providing each learner who we come into contact with, with the skills and knowledge to successfully take on the challenges faced by providers of air traffic control and technical services.



Providing the best possible education demands that we employ only the best possible instructors and personnel. At the same time, due to the highly technical nature of ATNS's business, we recognise that even the best teachers can only take students so far, which is why we also ensure that our learners have access to state-of-the-art equipment and facilities. Thus, we provide quality service, underpinning our motto: "Learn to Succeed."

Because the aviation industry does not operate in a vacuum, we are actively involved with international partners. For example, our co-operation agreement with the ENAC and Embry Riddle enables us to reciprocally present courses on each other's behalf and accredit each other's international ATS courses.

With a view to playing a more meaningful role in the global aviation arena, the Aviation Training Academy received ICAO Trainair Plus Associate membership in 2012. Full Trainair Plus membership will be pursued vigorously in 2013.

We were also successfully audited by various international Civil Aviation authorities and have received preferred training service provider status for a number of these authorities. Lasting training relationships have been established with, among others, Ghana Civil Aviation Authority, Angola Civil Aviation Authority, Seychelles Civil Aviation Authority and Nigeria Civil Aviation Authority.



“...we provide quality service, underpinning our motto:
Learn to Succeed.”

ATNS is actively involved in recruiting and training men and women from previously disadvantaged groups. We are proud to say that, of the 1 048 internal delegates we trained in air traffic services and in engineering during 2012, 446 were women, and 685 were African.

As ATNS seeks to spread its wings into Africa and become the service provider of choice for all air traffic services, the ATA is helping the company achieve this goal by providing world-class training to external delegates. During 2012, we trained 1 036 delegates, of whom 185 received ATS training, 768 in IATA courses, and 83 in engineering courses.

Our courses

The ATA offers a range of courses tailored to suit the needs of ATNS, as well as a series of courses designed for external clients.

Internal:

- Air traffic services
- Engineering
- Leadership development

External:

- Air traffic services
- Engineering
- IATA courses

Other services

The ATA offers more than just training. External clients can take advantage of our expertise through consultation services in:

- Customised courses
- Defining and developing succession plans
- Evaluation of existing corporate programmes
- ICAO standards in training
- Manpower requirements
- Performance management
- Recruitment of new personnel
- Training needs assessment

The Aviation Training Academy is hosting the ICAO regional Trainair Plus conference from 10 to 12 December 2013 in Johannesburg, South Africa



Tel: 011 570 0040
Email: DawieK@atns.co.za
www.atns.co.za

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: Mr. Percy Morokane, External Communications Officer – **Email:** marketing@atns.co.za

Tel: +27 11 607-1234 – **URL:** www.atns.co.za

Air Traffic and Navigation Services (ATNS) Company of South Africa is the sole provider of air traffic, navigation, training and associated services within South Africa and some parts of Africa. Responsible for 10 percent of the world's airspace, ATNS proudly manages more than half a million arrival and departure movements every year while maintaining ISO 9001 accreditation. ATNS is celebrating 20 years of selfless and distinguished Air Navigation and Aviation Training service provisions in Africa.

NIGERIAN COLLEGE OF AVIATION TECHNOLOGY (NCAT), 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 programmes 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: +201006097687 – **Fax:** +20222472230 – **URL:** www.unitedats.com

United ATS plays an integral part in aviation safety by providing professional training courses which are highly specific and are intended to equip aviation industry employees with new skills by educated staff in the implementation of a new procedure or by offering a venue through workshops, seminars, break-out sessions and conferences in which our aviation experts share tips and ideas and showcase outstanding work. United ATS offers unique professional training package solutions tailored to the practical needs of stakeholders with a particular emphasis on technical and legal issues to meet ICAO mandatory requirements in ATM, AIM, PANS OPS, ATC, Aeronautical Survey eTOD and airports.

ASIA AND PACIFIC

AIR NEW ZEALAND AVIATION INSTITUTE (NEW ZEALAND)

Leading Industry Training with an Industry Edge

Contact: John Ogilvie – **Email:** John.ogilvie@airnz.co.nz

Tel: +649 255 5701 – **Fax:** +649 255 5736 – **URL:** www.aviationinstitute.co.nz

The Aviation Institute leverages its relationship with its parent Air New Zealand to provide effective real-world training solutions to the international and domestic aviation industry, school leavers and career changers. The institute is accountable for the training of over 6000 technical and operational staff at Air New Zealand. This includes flight crew, cabin crew, engineers and associated ground staff. These services are also offered to aircraft operators and maintainers internationally. Having operated a vast range of aircraft in the past and with today's very modern aircraft fleet, the Air New Zealand Aviation Institute is able to provide a training solution for most situations from ab initio to type, loader to captain and Airbus 320 to Boeing 777.

SINGAPORE AVIATION ACADEMY SAA (SINGAPORE)

Developing Talent for Global Aviation

Contact: Ms. Angela Kwok, 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

SAA is the internationally-recognized training arm of the Civil Aviation Authority of Singapore. Made up of four specialized schools – the School of Aviation Management, the School of Aviation Safety and Security, the School of Air Traffic Services and the School of Airport Emergency Services – SAA has trained over 70,000 participants from 200 countries and territories. SAA was conferred the prestigious 34th Edward Warner Award by the ICAO Council on behalf of its then 185 Member States in 2000 "in recognition of its eminent contribution as a centre of excellence in international civil aviation training". In 2012, SAA was certified as an ICAO TRAINAIR PLUS Full Member. As a member, SAA aims to contribute towards the common goal of elevating global aviation training standards by developing educational resources and sharing valuable knowledge with the aviation community. SAA is also endorsed as an ICAO Government Safety Inspector Training Centre and ICAO Aviation Security Training Centre.

ATHRDC INDONESIA (INDONESIA)

Being a Leader in Aviation Training and Creating Excellent, Professional and Ethical Aviation Personnel

Contact: Capt. Faber B. Sitorus, Head of Training Program Division - **Email:** director@catc-indonesia.org

Tel: +62 21 598 2207 – **Fax:** +62 21 598 2279 – **URL:** www.pusbangudara.or.id

Air Transportation Human Resources Development Centre (ATHRDC) is a governmental organization dealing with the development of human resources in the field of air transport and having 6 executing units; ICAI Curug, ATSA Medan, ATSA Surabaya, ATSA Makassar, Aviation Training Office Palembang and Jayapura.

ICAI/STPI CURUG (INDONESIA)

Be One Stop Aviation Training

Contact: Sukarwoto, ST, S.SiT, MT, Head of Home Affairs and Public Relation Subdivision

Tel: +62 21 5988336, +62 21 598 2204/2205 Ext. 549 – **Fax:** +62 21 5982234, +62 21 5988336 – **URL:** www.stpicurug.uc.id

The Indonesian Civil Aviation Institute (ICAI) Curug is a technical unit under the Ministry of Communication, which is responsible to conduct the professional education and training in the field of civil aviation. Having 4 (four) departments: *Pilot Department (CPL, ATPL); Aviation Engineering Department (Aircraft Mechanics, Airways Electrical Mechanics, Radio Mechanic, Airport Maintenance and Mechanical); Aviation Safety Department (Junior ATC, Senior ATC, Advanced ATC, Flight Service Officer, Aeronautical Information Service, Fire Fighting and Salvage); Aviation Management Department (Civil Aviation Management, Airport Operation Management, Commercial Air Transportation).*

EUROPE

AAI - AVIATION ACADEMY INTERNATIONAL GMBH (GERMANY)

An Aviation Academy for Experts and Professionals

Contact: Peter Wilczek – Director of Training – **Email:** General Inquiries: study@avac-int.eu
Inquiries regarding certification of Aviation Experts: cert@avac-int.eu

Tel: +49-7467-949 29 30 – **URL:** www.avac-int.eu

The founding members of AAI comprises university professors, aviation law experts, test pilots, court surveyors, examiners and representatives of various local authorities. Our academy aims to train aviation specialists and experts according to established international levels. In addition, our certified ISO 17024:2012 certification branch has the task to certify aviation professionals and to make them available for an international pool of certified aviation experts. These international certified aviation experts will receive a professional quality passport and certificate in accordance with ISO 17024:2012. Knowledge and experience of such certified experts are much more transparent for authorities and the aviation industry. At AAI, it is also possible for aviation personnel to enroll in single specialist training courses, as may be required by the pertinent authorities.

AIRTRACE - INTERNATIONAL AIRPORT ENVIRONMENT TRAINING CENTRE (SWITZERLAND)

Swiss Quality Training

Contact: Ms. Mercedes Tercier, Airtrace coordinator – **Email:** info@airtrace.ch

Tel: +41 22 817 46 66 – **URL:** www.airtrace.ch

Airtrace – International Airport Environment Training Centre – is a company operating the fields of training, auditing and counseling for airport safety, environment and management. Airtrace is specialized in Wildlife Hazard Prevention but courses include Environment and Biology, Airport Management System, Safety Management System, Crisis Management, Operations Continuity, Airside Driving Permit, First Aid, Aircraft Rescue and firefighting. We offer our experience and skills through a broad spectrum of activity to bring the best solutions to airports.

ANGLO-CONTINENTAL (EDUCATION GROUP (UNITED KINGDOM))

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 training organisation. We have been teaching Aviation English worldwide for over 40 years. Anglo-Continental provides special programmes and a test, the TEAP, designed for aviation personnel to meet ICAO's language proficiency requirements. We offer both scheduled and bespoke courses for aviation personnel in order to meet our customers' specific needs. The TEAP is approved by the UK CAA, and Anglo-Continental's professionally trained raters and our overseas centres deliver the test in the UK and abroad.

ATLANTIC FLIGHT TRAINING ACADEMY (AFTA) (IRELAND)

Training Ordinary People to be Extraordinary Pilots

Contact: Allen Field, Director of Operations – **Email:** info@afta.ie

Tel: +353 21 4888737 – **URL:** www.afta.ie

Atlantic Flight Training Academy (AFTA) was founded in 1995 and is based at Cork International Airport, Ireland. The academy is run by airline pilots for airline pilots. Our students are cadets from international airlines and also self-sponsored candidates from all over the world. We have a large, modern self-maintained fleet of Cessna 172's and Piper Seneca's alongside a Bellanca Super Decathlon which is used for advanced upset training and aerobatics. Our courses are centred on The First Officer Fully Integrated Pilot Training Course and the First Officer Modular Pilot Training Course. We also conduct ratings and renewals/revalidations such as SEP, MEP, FIC, CRI, MEIR, SEIR and conversions from ICAO licence/ratings to EASA licence/ratings. Our quality of instruction is of the highest among flight academies and our prices are among the most competitive.



Preparatory ICAO/McGill Pre-Assembly Symposium

Enhancing Air Transport Connectivity: Passengers, Cargo, Technology and Profitability

21 to 22 September 2013, ICAO Headquarters, Montréal, Canada

ICAO and the McGill University Institute of Air & Space Law will once again cooperate on a special Pre-ICAO Assembly Symposium, addressing key issues on the operational, management and policy levels with respect to the latest air transport economic and air navigation developments.

This unique preparatory event provides State delegates, industry representatives and other air transport stakeholders with a practical and thought-provoking forum in advance of the 38th Session of the ICAO Assembly on 24 September.

TOPICS TO BE ADDRESSED

- Focusing on the User
- Enhancing Connectivity Through Technology
- Regulatory Responses to Consumer Concerns
- The Costs of Regulatory Divergence
- Moving Towards Seamless Travel
- Taxes, Fees and Charges
- Tools to Foster Convergence

SOME OF OUR KEYNOTES SPEAKERS

- **Raymond Benjamin, Secretary General**
International Civil Aviation Organization (ICAO)
- **Angela Gittens, Director General**
Airports Council International (ACI)
- **Daniel Jutras, Dean**
Faculty of Law, McGill University
- **Jeff Poole, Director General**
Civil Air Navigation Services Organisation (CANSO)

AUDIENCE: This Symposium is a must attend for States' Assembly Delegates, CAA professionals, airlines, airports, air navigation service providers and organizations directly involved in supporting the aviation business such as manufacturers, law and consulting firms, and academia.

REGISTER NOW AT:

<http://www.icao.int/Meetings/ICAO-McGill2013>

To sponsor or exhibit at this prestigious gathering of aviation policy makers please contact:

Mr. Keith Miller - Tel: +1 514-954-8219 (ext. 6293) - Fax: +1 514-954-6769 - E-mail: kmiller@icao.int

EUROPE

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.

CENTRE FRANÇAIS DE FORMATION DES POMPIERS D'AÉROPORT-C2FPA (FRANCE)

Aeronautical Expertise

Contact: Jean-Michel Azemar – President/CEO – **Email:** contact@c2fpa.fr
Tel: +33 2 54 35 53 50 – **URL:** www.c2fpa.fr

C2FPA is a training center founded by the French Airport Union (UAF - l'Union des Aéroports Français) and 35 of France's largest airports with one goal: To deliver Airport Rescue and Fire Fight Service (ARFFS) and wildlife hazard prevention training programmes. C2FPA is able to deliver a full range of structured learning programme consistent with ICAO standards and recommended practices (SARPs). To meet the requirements laid down by ICAO, in the annex 14 manual, it is continually developing and updating a pedagogy based on the principles of airport rescue and firefighting (PSLCIA) to ensure the effectiveness of ARFFs. C2FPA has a unique and extensive fire training area providing realistic fire scenarios on one of the most extensive fire training grounds in the world; clean burning is assured by the use of liquid propane.

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.

FINSECPRO (FINLAND)

Innovative Concepts for Aviation Security and Safety, Nation and Worldwide

Contact: Jan Kappi, Chairman of the Board – **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: 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 organizational 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.

EUROPE

INTERNATIONAL ASSOCIATION OF AVIATION PERSONNEL SCHOOLS (IAAPS) (THE NETHERLANDS)

ISTC, the Answer to All Your Aviation Emergency Response Requirements

Contact: Leen van der Spek, Secretary – **Email:** secretary@iaaps.info

Tel: +0031 (0)50 30 98 330 – **URL:** www.iaaps.info

IAAPS is a non-profit organization where any aviation training organization can become a member and share experience, concerns and projects, both within the association and with the regulatory environment. IAAPS special attention is on regulations as prepared by ICAO and EASA. Our members support Evidence Based Training as developed by the ITQI group of IATA and Competency Based Training as prescribed in MPL regulations. IAAPS has representatives in EASA FCL001, FCL002 and FCL008, EAB (EASA Advisory Board) and SSCC (Safety Standards Consultative Committee). In Montréal, IAAPS is represented on ICAO matters like the NGAP (Next Generation of Aviation's Professional Pilots). Annual IAAPS general assembly invites speakers to discuss the latest developments about aviation training.

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.

MAYFLOWER COLLEGE (UNITED KINGDOM)

A leader in Aviation English Training & Testing

Contact: 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; and
- Test of English for Aviation (T.E.A.) – a face-to-face test delivered at over 100 test centres around the world.

MLS INTERNATIONAL (UNITED KINGDOM)

The Leading Edge in English for Aviation Training and Assessment

Contact: Mark Henwood – **Email:** mhenwood@mls-college.co.uk

Tel: +44 (0)1202 291556 – **URL:** www.mls-college.co.uk

With over 25 years experience in providing English for Aviation training services both in the UK and overseas to the international aviation community. MLS recognizes and understands the complexities faced by organizations and individuals in meeting the revised ICAO language proficiency requirements. Drawing on this extensive expertise, MLS offers language consultancy, a comprehensive range of scheduled and bespoke training programmes and, in the CAAi EALTS, a UK CAA approved and internationally recognized language proficiency assessment.

SPECIALIST AIRPORT SERVICES (UNITED KINGDOM)

UK based-Worldwide Experience

Contact: Andy Rackham, Director – **Email:** Sasopsuk@gmail.com – **Tel:** +44 7501 928521 – **URL:** www.sasopsuk.co.uk

With over 40 years of diverse airport working experience including management, operations, project planning and supervision, provision and management of ATC services, document production and review, aerodrome compliance and certification, emergency and exercise planning. A detailed working knowledge and application of ICAO SARPs and supportive documents plus UK CAA procedure and protocols. Development and delivery of airport operations training courses covering a wide range of topics and content tailored to the client's operational demands.

EUROPE

THALES ATM TRAINING INSTITUTE (FRANCE)

Long-Term Relationship with Our Customers to Fulfill Future Training Needs

Contact: Eric Rodrigues, Head of ILS Department – **Email:** eric.rodrigues@thalesgroup.com

Tel: 33 0 1 7961 1870 – **URL:** www.thalesatm-services.com

Thales ATM Training Institute offers a wide range of training programmes for your system operators, system engineers, maintenance staff, as well as your trainers and supervisors. Our training institute allows you to: extend your knowledge and expertise; tailor the courses to your operational needs; train in a close to real environment; enjoy the most innovative training environment; and access to Thales Certification for ATCO & ATSEP personnel through a training path on Thales System. Thales ATM has trained 170 countries and offers more than 700 days of training per year.

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 centres – European Sub-Regional Aviation Security and Government Safety Inspectors Training Centres being endorsed by ICAO and national centres certified by the CAA of Ukraine. It is a member of the ECAC Network of Training Organizations. 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.

MIDDLE EAST

QATAR AIRWAYS MAINTENANCE TRAINING ORGANISATION (QATAR)

Excellence in Everything We Do

Contact: Abdulsalam Al-Aamri – **Email:** aalaamri@qatarairways.com.qa

Tel: +00-974-4462-2824 – **Fax:** +00-974-4462-2528 – **URL:** www.qatarairways.com

Qatar Airways Maintenance Training (QAMT) is a Part-147 (EASA/QCAA) approved maintenance training organization, providing type training on all AIRBUS Fleet and BOEING 777 and 787 airplanes. Qatar Airways MT offers a vast array of Part 145 training courses including EWIS, Fuel Tank Safety (CDCCL) and Engine Run-ups. Academic as well as Practical training is delivered to the highest industry standards by a team of dedicated and highly skilled training staff using state-of-the-art training technology.

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 crew members 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 Montréal 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 Audit and a unique programme of CAA Leadership Training. CQFA is the world's largest civilian provider of Winter Aviation Survival courses. CQFA's online training programme 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 Programme 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.ena.college-em.qc.ca

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 (ITDI) Industry

Contact: 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.

NORTH AMERICA

PAN AM INTERNATIONAL FLIGHT ACADEMY (UNITED STATES)

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 centres in Europe and Asia. They offer a complete menu of training including Type Ratings, Recurrent, Flight Attendant, ATC, Dispatcher and Maintenance training programmes 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.

PRATT & WHITNEY (CANADA)

It's in our Power.™

Contact: Andy Bordick, General Manager – **Email:** andrew.bordick@pw.utc.com
Tel: +1 860 565-8367 – **URL:** www.pwcustomertraining.com

Pratt & Whitney Customer Training delivers a focused learning experience to students from around the world. Our curriculum blends classroom instruction with computer-based technologies and hands-on engine practice. We support both commercial and military engine maintenance training, engineering and engine performance courses, leadership programmes and educational resources. All of our courses emphasize proactive safety, reliability, performance and quality. Self-paced, online courses are available to support your training needs.

SOUTH AMERICA

ACADEMIA DE CAPACITACIÓN EN SEGURIDAD Y SERVICIOS (CHILE)

The Philosophy of Service is our Hallmark Differentiator

Contact: Claudia Cáceres C. Gerente de Operaciones – **Email:** claudia.caceres@acass.cl
Tel: +56 2 733 25 00 – **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.



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



Need a reason to train?
We'll give you over

300

IATA Training & Development Institute

KNOWLEDGE • EXPERIENCE • NETWORKING • SKILLS • RESULTS

IATA has a huge array of worldwide aviation training options, covering all critical areas of the industry

The aviation industry is a prime mover in today's globalized economy. Well-trained, skilled people are a cornerstone of this business.

ITDI is one of the world's leading suppliers of flexible, high-quality aviation training solutions. Last year, we trained over 92,000 students and we're still growing! ITDI's more than 300 internationally recognized training courses and partnerships with over 440 of the world's best schools ensure a strong global perspective for aviation professionals at every level.

Train in the way that's best for you!

- Classroom training
- In-company training
- Distance learning

More than 300 internationally recognized training courses!

Boost your competitive advantage. www.iata.org/training