

# ICAO TRAINING REPORT

NEWS AND FEATURES ON CIVIL AVIATION-RELATED TRAINING DEVELOPMENTS - VOL. 3 - NO. 2

## ORGANIZATIONAL RIGHT-SIZING

Training and retaining the right person  
with the right skills and competencies

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# PLANNING FOR TOMORROW'S HUMAN RESOURCE NEEDS, TODAY!

 If there is an industry that has defined progress and development in the 20<sup>th</sup> and 21<sup>st</sup> centuries – it is perhaps the aviation industry. Aviation has been the driving force in building a globalized world, breaking barriers between countries and cultures, connecting people and places, creating jobs and economic opportunities. From a handful of travelers using planes in the early days to the more than 3 billion that will travel in 2013, and the forecasted 6 billion+ that will travel by 2030, there is unanimous agreement that growth and expansion will continue into the foreseeable future.

But aviation is also an industry of contradictions. While technology plays an ever increasing role, we still are very much a “human” based industry. While we invest billions in aviation infrastructure and equipment, we keep reducing investments in human capital. While we build aircraft that are more efficient and reliable, we find it difficult to manage passenger expectations at airports. While we attract more and more travelers every year, we find it difficult to attract new talent to work in the industry.

Aviation consistently keeps making headlines around the world. While air travel is one of the safest modes of travel, even a small isolated accident tends to get front page coverage; security issues continue to dominate the passenger experience; environmental issues impact the way we operate. But one issue never seems to make any headlines – the manpower shortage.

Aviation has always been a future focused industry when it comes to aircraft, infrastructure and technology, but there has been one key element that seems to have been left out and that is the people. There have been numerous articles on the impending shortages of skilled manpower that the industry will face, which is further compounded by the mis-match of current skills with required skills. To add to this complex equation, aviation seems to have lost its glamour and ability to attract fresh talent and faces the prospect of a shrinking workforce with older generations being due for retirement.

With ICAO forecasts pointing to 25,000 new aircraft being added to the current fleet of 17,000 aircraft in the next 20 years, the question is where we will get the people to operate and manage these mega-fleets.

These growth forecasts are further validated by the latest Boeing 2013 outlook which indicates that by 2032 the world will require 498,000 new commercial airline pilots and 556,000 new commercial airline maintenance technicians equating to more than one million new jobs.

A key question that needs to be asked – “When will the manpower shortages start to negatively affect the industry?” This is a potential tsunami waiting to happen. All the gains that we have made over the years could be wiped out. The only way this tsunami can be stopped is if the industry takes a pragmatic and proactive collective approach to addressing the key issues with training being a key area that needs to be tackled on an urgent basis.

Human Resource planning cannot be done in isolation. ICAO has taken the lead in addressing the issue with the Next Generation of Aviation Professionals (NGAP) and the TRAINAIR PLUS initiatives. However, while ICAO has set the foundation for the future, much still remains to be done by member States and by individual organizations with aviation human resource departments taking the lead. Aviation Human Resource departments need to change from being transactionally driven to strategically driven.

This then leads us to the question of whether adequate training facilities and capabilities exist around the globe. While the four key stakeholders of the industry – ANS, Regulators, Airlines and Airports work closely together on operational requirements; from a training perspective the focus has largely centered on training ANS staff, flight crew and engineers. Airports have been largely left out of the “training equation” and have been facing shortages in critical positions. Many airports still rely on adhoc and antiquated training methods where a large part of the learning experience is where people are self taught on the job. While there have been isolated attempts to address this training vacuum in Europe, the Middle East and Asia, many regions are only now in the process of building training capacity and facilities. The challenge for the industry remains to ensure an adequately trained work force that will ensure safety and security standards are not compromised. Another key challenge is to ensure that current employees are up-skilled to manage job requirements of a rapidly changing and evolving industry.

There needs to be a paradigm shift where we move from not just discussing and planning but to actively collaborating, communicating and cooperating with like-minded organizations across the globe. We need to establish paths for cooperation much like the flight paths that crisscross the globe.

Growth in the aviation industry has always been defined by the growth in passengers and airline fleets. It is now time for us to redefine growth by the number of aviation professionals that we are able to groom and add to the industry. We need to tear down the barriers that exist between organizations and focus on establishing common training standards and material in line with the TRAINAIR PLUS model as well as other applicable models.



We need to build on this culture of sharing by constructive interaction, discussions and debates. We need to throw aside established preconceived notions of training models and look at models that work for the industry needs of today and the future. Common competency frameworks linked to actual operational requirements need to be updated and aligned.

Our model of inclusion needs to cover stakeholders from all sectors of the industry, with both government and private sectors working together in a spirit of transparency, putting aside regional differences and commercial considerations, to build common synergies that benefit the entire industry. Focus has to be on excellence and the highest quality of training, relevant to the industry needs and requirements.

Let us seize the opportunity to redraw the map of aviation training, to create a strong network of centers that will spread a positive “tsunami” around the globe impacting all sectors of the industry. Let us start planning for tomorrow’s human resource needs, today. ■

**Dr. Othman Al Khoori**

*Chairman, ICAO TRAINAIR PLUS Steering Committee and  
Chief Human Resources Officer, Abu Dhabi Airports Company*

# ADDRESSING THE SKILLS AND LABOUR CRISIS: THE CANADIAN MODEL



## ABOUT ROBERT DONALD

Robert Donald is the Executive Director and CEO of the Canadian Council for Aviation and Aerospace (CCAA) having been appointed in January 2008. CCAA is dedicated to assisting industry ensure it has enough workers with the right skills. CCAA has been an active participant in the ICAO NGAP initiative since its inception. Robert is the former General Counsel of the International Air Transport Association (IATA). Prior to joining IATA, Robert was a partner in a Montreal law firm.

✈ The Canadian Council for Aviation & Aerospace (CCAA) is a "not-for-profit" organization which is dedicated to ensuring the aviation and aerospace industry has enough workers with the right skills to meet industry needs. CCAA has two main areas of focus: skills development and industry demographics (supply and demand for particular skills).

In 1988, the Canadian aviation maintenance industry was facing a critical shortage of skilled personnel and a lack of standards for most occupations in the sector.

A comprehensive human resource study was commissioned. The study, undertaken by Price Waterhouse between 1988 and 1991, was the first one ever conducted on the industry. The study recommended action in four areas:

- Defining **competency standards** for various occupations (trades) in the industry.
- Establishing training programmes and core curricula for post-secondary training organizations.
- **Recruiting new workers** for the industry.
- Developing mechanisms for **industry-wide resource planning**.

The Government of Canada recognized the importance of aviation and aerospace skills development and provided crucial support for the founding of the Canadian Council for Aviation & Aerospace (CCAA) in 1991. CCAA continues to work with the Government of Canada on numerous projects that enhance industry efficiencies which contribute to Canada's successful aviation and aerospace industry.

## THE LOOMING GLOBAL DEMOGRAPHIC CRISIS

Readers will no doubt be familiar with the issue and the projected crisis. Numerous studies have been undertaken which project alarming shortages. ICAO has recently updated its study and projections, as have Boeing and other major manufacturers. All studies agree that the aviation industry will continue to grow at about 5% per year until 2030. They also project that there will be insufficient workers with the skills necessary to meet this projected growth.

Boeing's 2013 International Forecast projected a worldwide shortage of 498,000 pilots and 556,000 airline maintenance technicians by 2032.

*"Airlines will need 498,000 pilots and 556,500 maintenance personnel over the next 20 years to accommodate demand for new and replacement aircraft."*

*"When you add up all the numbers, you quickly understand the issues facing this industry. Our challenge is adapting our training to engage the future"*

*generation of people who will fly and maintain the more than 30,000 airplanes that will be delivered by 2032.” Boeing CCO Roei Ganzarski – Summer 2013*

Readers will no doubt also be aware of the ICAO Next Generation of Aviation Professionals (NGAP) initiative. CCAA has had the privilege of participating in this important initiative since its inception. Part of the NGAP work is to look at best practices worldwide. It is in this context that CCAA has been invited to present the Canadian model.

## CCAA SKILLS DEVELOPMENT ROADMAP

### 1. Labour Market Information

The CCAA skills development roadmap consists of several components, the first of which is Labour Market Data (or Labour Market Information – LMI). In order to address and respond to labour market challenges, one first has to assess and determine precisely what the needs of industry are. More specifically, what are the current and projected labour shortages and what are the current projected skills shortages (or surplus)? In addition to the data derived from industry, it is also crucial to assess the supply of labour and skills coming from colleges, universities and other training organizations. Other factors such as immigration of foreign workers, retirement projections for the existing workforce, skills required by new technologies (e.g. composites) also impact the overall determination of labour and skills needs for the industry.

CCAA has conducted numerous labour market studies over the years, the most recent of which was commissioned by the Canadian Department of Foreign Affairs and International Trade (DFAIT) in 2011. This study identified the key occupations in airframe manufacturing, and identified specific labour shortages and skills shortages. This study and others like it allow CCAA, industry, educators and governments to develop programmes to address these specific shortages, and develop a corrective action plan to respond to the shortages. Other LMI studies conducted by CCAA include; Canadian Aviation Manufacturers and Maintenance Industry – 2002; Commercial Pilots in Canada – 2010; Canadian Airports – June 2010. Copies of these and other studies are available from the CCAA website.

Labour market studies are the crucial starting point for industry Human Resource planning, as they measure current and future supply and demand, by occupation and skillset. Good studies differentiate between labour shortages and skills shortages.

## COMPETENCY PROFILES (OCCUPATIONAL STANDARDS)

Aerospace Materials Specialist\*  
Aircraft Gas Turbine Engine Repair and Overhaul Technician\*  
Aircraft Interior Technician\*  
Aircraft Maintenance Technician  
Aircraft Mechanical Assembler  
Aircraft Propeller Systems Technician\*  
Aircraft Reciprocating Engine Technician\*  
Aircraft Refueller  
Aircraft Simulator Technician  
Aircraft Structures Assembler  
Aircraft Structures Technician  
Airport Airside Worker  
Aviation Electrical / Electronics / Instrument Component Technician\*  
Aviation Ground Services Attendant  
Aviation Machinist\*  
Aviation Maintenance Inspector  
Aviation Maintenance Manager  
Aviation Mechanical Component Technician\*  
Aviation Non-Destructive Inspection Technician\*  
Aviation Painter\*  
Aviation Special Processes Technician\*  
Aviation Welding Technician\*  
Avionics Maintenance Technician  
Canadian Commercial Professional Pilot  
Composite Fabricator  
Electrical / Electronic Assembler  
Quality Assurance Manager  
Quality Systems Auditor  
Transportation of Dangerous Goods Program Administrator

\*12 Standards recognized by Transport Canada for personnel working in an Approved Maintenance Organization (AMO).

### CCAA Instructor Guides and Curricula

1. Aircraft Gas Turbine Engine Repair and Overhaul Technician
2. Aircraft Interior Technician
3. Aircraft Maintenance Technician\*
4. Aircraft Propeller Systems Technician
5. Aircraft Structures Technician\*
6. Aviation Non-Destructive Inspection Technician
7. Aviation Machinist
8. Aviation Mechanical Component Technician
9. Aviation Painter
10. Aviation Welding Technician
11. Avionics Maintenance Technician\*
12. Composite Fabricator Curriculum
13. Training of Canadian Commercial Pilots

\* These Curricula have been recognized by Transport Canada for training delivered by an Approved Training Organization (ATO).



## Task E17

Engine Assembly continued**Task 17 Assembles sub-assemblies into modules/sections.**

**Trend:** There is a move toward more complex sub-assemblies with an increase in the use of electronic equipment. The use of ceramics/exotic materials has emphasized greater care in the handling of the sub-assemblies. More complex build processes with closer tolerances are becoming the norm.

	Sub-tasks	Supporting Knowledge and Skills	Tools and Resources
17.01	Refers to manuals and documentation.	knowledge of manufacturers' manuals, maintenance policy manuals and company policies and procedures  knowledge of Air Transport Association (ATA) codes and other codes	manufacturers' maintenance manuals, maintenance policy manual, company policies and procedures, microfiche, computer, electronic manuals, digital media
17.02	Verifies documentation for sub-assemblies.	knowledge of manufacturers' manuals, maintenance policy manuals and company policies and procedures  knowledge of service bulletins  knowledge of airworthiness directives  ability to ensure documentation matches sub-assembly	manufacturers' maintenance manuals, maintenance policy manual, company policies and procedures, service bulletins, airworthiness directives, documentation
17.03	Assembles gear boxes.	knowledge of potential safety hazards	PPE, manufacturers' maintenance manuals, maintenance policy manual, standard tools, presses, engine-specific tools, heat source, cooling

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Aircraft Gas Turbine Engine Repair and  
Overhaul Technician

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## 2. Competency Profiles (Occupational Standards) with Supporting Logbooks

National standards for aviation and aerospace trades serve multiple purposes. These include facilitating the hiring process, developing training plans, developing national curricula for training organizations (colleges, vocational schools, universities), meeting regulatory requirements (demonstrating competency of the workforce), reducing accidents/incidents and improving safety, improving the performance of suppliers and greatly enhancing the ability to analyze shortages.

The first step in developing the Profiles is for industry to identify occupations which would benefit from Competency Profiles. By way of example, the recent CCAA labour market information study of Canadian airports identified the need for an occupational standard for "Airside Workers". Once industry identifies a need, industry subject matter experts then establish the experience, knowledge and skills required to be considered competent in that occupation and perform the occupation "professionally". Competency profiles are not a job description, they are extremely detailed documents ranging anywhere from 50 to 250 pages or more. Competency profiles provide a complete process for assessing the competency of new hires, or of a company's existing workforce. Using these profiles makes it easier to identify competency gaps when interviewing new hires. The same is true to identify gaps required for "up skilling" or promotions. It also provides employers with a uniform standard for staff training programmes.

For large organizations or those with multiple branches (in one or more countries) competency profiles provide a uniform standard for training throughout the organization, facilitating internal mobility of employees.

## 3. National Curricula

The competency profiles, developed by the industry, detail what skills and knowledge industry needs for specific occupations. These competency profiles are then used to design national curricula for post-secondary training organizations, which align with the requirements set out in the competency profile. This ensures that the curricula meet a uniform standard and are aligned with what industry has determined it needs. To date, CCAA has developed 13 national curricula for aviation and aerospace trades.

## 4. Accreditation of Training Organization Programmes

Development of national curricula for use by training organizations throughout the country is an important part of a skills development programme. However, Canadian industry determined there was a need for a programme that ensures colleges are teaching the skills needed by industry. As a result, CCAA developed an Accreditation Programme to ensure that training organizations were meeting a high standard in the delivery of aviation and aerospace programmes, and not simply

the regulatory minimum standard. Today, CCAA accredits 30 programmes in 16 institutions across Canada. The accreditation process involves detailed audits of a training organization's training manuals, lesson plans, facilities and equipment, the qualifications of instructors and other related matters. Accredited training organizations are audited on a regular basis. Where the audit establishes "findings", the training organization must submit a corrective action plan, and implement it in an agreed timeframe in order to maintain its accreditation. Canadian industry is thus assured that a graduate from any of the accredited programmes has the knowledge and skills required by industry.

## 5. Certification of Competency for Individuals

As noted above, competency profiles identify competencies required by industry for particular trades, or work to be performed in the organization, and a company can use them in a variety of ways. Certification is a voluntary process whereby individuals become "certified" as competent in one or more of the 29 trades for which competency profiles have been developed. Whereas accreditation is a sign of excellence for a training organization, certification is the proof of competence for individuals, or of a workforce within an organization. Certification provides proof of competency to third party auditors (e.g. ISO, audits from customers or potential



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customers). Most regulators require that aviation organizations demonstrate proof of the competency of their work in order to maintain requisite licenses. Certification provides that evidence. Certification also provides national recognition of competencies and capabilities, and greatly facilitates the employer's recruitment process. Whereas the competency profile allows the employer to assess skills of new hires, if the new hire is certified in a particular trade, the employer need not perform the basic but time-consuming assessment of skills and knowledge since it knows that the employee has the knowledge and skills detailed in the competency profile. Having a certified workforce has been proven to reduce accidents and incidents, and, not surprisingly, reduce insurance premiums. Having a certified workforce also provides a competitive advantage to companies competing for work nationally or internationally. Insisting that your suppliers have a certified workforce can improve their performance. Most CCAA training programmes are based on competency profiles.

## 6. Targeted Training

Industry identified the need for short, focused training to respond to regulatory requirements (e.g. Safety Management Systems – SMS) and new technologies (e.g. composites). Over the last few years CCAA has developed a suite of training programmes to respond to these needs. Examples include Quality Assurance, Audit Preparation, Fatigue Risk Management, Aviation Management, Dangerous Goods Programme Administrator, Human Factors, Airside Workers, and Instructor Guides for instructors of commercial pilots and composite fabricators.

### AVIATION AND AEROSPACE ORIENTATION PROGRAMME FOR HIGH SCHOOLS

As part of its mission to assist industry to ensure it has sufficient workers, CCAA has developed an extensive outreach programme which includes a high school curricula. CCAA has provided this to high schools across Canada. It is increasingly

important to encourage the interest of the next generation at an ever earlier age. Many high schools have programmes for trades such as auto mechanic. However, very few in Canada had programmes designed for aviation and aerospace. As a result, CCAA obtained funding from the federal government to develop a high school curricula and instructor guide. The programme is extremely detailed and provides instructors with lesson plans and resources for three (3) distinct 125 hour courses which can be provided individually or sequentially (over 3 years). Topics include: Aerodynamics & Electrical Basics, Aerospace Manufacturing, Aircraft Components, Structures & Functions, Aircraft Tools, Airport Operations, Careers in Aviation and Aerospace, Hardware & Materials, Information Sources, Inspection, Introduction to Flight, Marshalling and Servicing, Practical Application of Math and Physics, Practical Projects, Regulatory Requirements, and Safety/Workplace Hazardous Information System.

### SUMMARY

The conclusions from the Price Waterhouse Study in Canada provide a roadmap for countries looking to develop or improve their Human Resource Strategy for their aviation and aerospace industry. The four areas for action are as applicable globally as they are to the Canadian context:

- Defining **competency standards** for various occupations (trades) in the industry.
- Establishing training programmes and **core curricula** for post-secondary training organizations.
- **Recruiting new workers** for the industry.
- Developing mechanisms for **industry-wide resource planning**.

CCAA would be pleased to work with companies, States or regions to implement a skills development programme. ■

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# TALENT MANAGEMENT: STUDIES AND RESEARCH



## ABOUT ABDELLAH MENOÙ

Abdellah Menou, PhD, MS, heads up the International Academy of Civil Aviation at the Office National des Aéroports (ONDA). He has worked for Morocco's national airports authority since 2005 where he participated in the design of an integrated system plan for coordinating the development, modernization and expansion of Morocco's airports. Before joining ONDA, Abdellah Menou was an Associate Professor at the University Of Orleans, France. He has a Ph.D. and High Research Qualification (HdR) in Applied Sciences (Civil and Mechanical Engineering), from the University of Pau (UPPA), and Toulouse University France. He is a member of the technical committee of GIE Galileo Moroccan Group of GNSS Applications in Civil Aviation in Morocco and he was also Chairman of First and Second International Symposium on Composites and Aircraft Materials, ACMA2007, ACMA2008, ACMA2010 and ACMA2012, Morocco.

✈ Talent Management has been one of the most debated subjects in Human Resource Management (HRM) theory and practice in recent years. As the global economy expanded dramatically between 2002 through 2007, business leaders and human resource managers worried about the intensifying international competition for talent; the impact of not having the right people in place to lead and confront business challenges; as well as the employment of below-average candidates “just to fill positions” (Economist, October 2006; Price and Turnbull, 2007). Reflecting these concerns, the Price Waterhouse Coopers 11<sup>th</sup> Annual Global Survey showed that 89% of CEOs surveyed considered the *people agenda* one of their top priorities (PWC, 2008a,b:35).

Today, given an unprecedented global financial crisis, economic slow-down, and massive restructuring, “talent” remains a critical agenda item focused on the highest achievers: “As deteriorating performance forces increasingly aggressive headcount reductions, it's easy to lose valuable contributors inadvertently, damage morale or the company's external reputation among potential employees, or drop the ball on important training and staff-development programs.” (Guthridge et al., 2008).

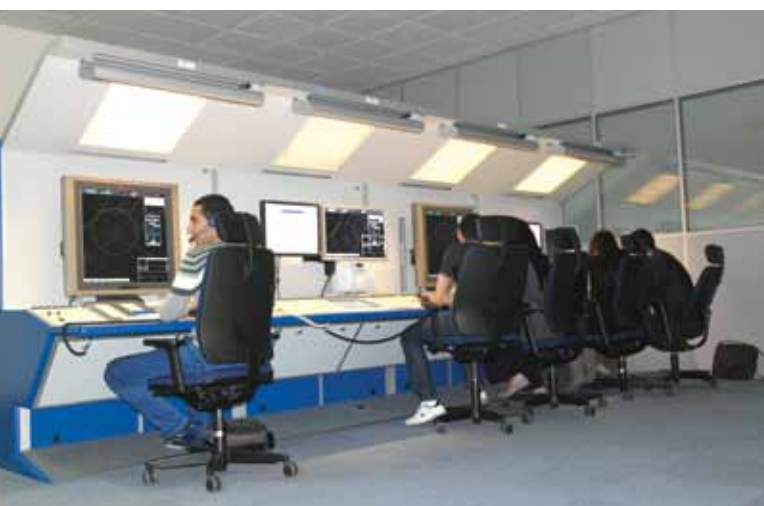
## WHAT IS TALENT MANAGEMENT?

A cursory review of the talent management literature reveals a degree of debate as to the conceptual boundaries of the topic. Indeed, Aston and Morton (2005: 30) noted that there “... isn't a single consistent or concise definition” of talent management. Notwithstanding this criticism, Lewis and Heckman (2006) identified three key streams of thought around the concept of talent management.

First, there are those who merely substitute the label Talent Management for Human Resource Management. Studies in this tradition often limit their focus to particular HR practices such as recruitment, leadership development, succession planning and the like. The contribution of this literature is relatively limited beyond the strategic HR literature, as it largely amounts to a rebranding of HRM.

A second strand of literature emphasizes the development of talent pools focusing on “projecting employee/staffing needs and managing the progression of employees through positions” (Lewis & Heckman, 2006: 140). Studies in this tradition typically build on earlier research in the manpower planning or succession planning literatures. While adopting a relatively narrow focus, studies in this tradition at least provide a degree of differentiation as to what Talent Management is vis-à-vis HRM.

The third stream focuses on the management of talented people. This literature argues that all roles within the organization should be filled with “A” performers, referred to as “topgrading” (Smart, 1999) and emphasizes the management of “C” players, or consistently poor performers, out of the organization (Michaels et al., 2001). While the third approach is highly influential, we recognize limitations to this approach and argue it is neither desirable nor appropriate to fill all positions within the organization with top performers. Equally, if the talent management system is applied to all of an organization's employees (i.e. including poor performers as well as top performing employees), it is difficult to differentiate Talent Management from conventional Human Resource Management.



### FACTORS IMPACTING THE WAR FOR TALENT

Although it is beyond the scope of this article to review all of the influences on the global “talent war”, here, briefly, are reviews of four significant factors affecting the quantity, quality and characteristics of talent:

- (i) global demographic and economic trends;
- (ii) increasing mobility of people and organizations;
- (iii) transformational changes to business environments, skills and cultures; and
- (iv) growing levels of workforce diversity.

#### (i) Global demographic and economic trends

Increasing longevity, declining birthrates, and the disproportionate size of the post-war baby boom generation are large demographic forces driving an unprecedented shift in the age distribution of the general population, and with it, the labour pool supply. With higher levels of sanitation and healthcare, people born today can expect to live between 65 and 80 years in most countries, compared to an average age of 18 for most of

human history, and 50 at the turn of the 20<sup>th</sup> century. Longevity is accompanied by dramatically declining birth rates. The average number of children per woman in countries like China (1.8), Italy (1.2), Germany (1.4), Singapore (1.4), and Japan (1.2), are below the replacement rate of 2.1 children per woman needed to maintain population levels (S. Beechler and al 2009).

#### (ii) Increasing mobility

Globalization changes the mobility of people across permeable geographic and cultural boundaries. Global labour competition and border mobility are possible with lower immigration and emigration barriers, and with people more willing to relocate outside their home countries. Inter-country and regional economic and demographic differences also stimulate labour flows such as comparative gaps in real wage rates and differences in labour-force age profiles.

#### (iii) Transformational changes to business environments, skills and cultures

The move from product-based to knowledge-based economies is a fundamental business transformation impacting the global war for talent. Worldwide, the service sector provides 42.7% of jobs compared to agriculture (34.9%) and industry (22.4%) and, in developed economies, the service sector is even larger; for instance, representing 71.5% of all EU jobs. Service economies shift investment towards intangible and human assets. Baruch Lev, an accounting professor at New York University, estimates that intangible assets — from a skilled workforce to patents to know-how — account for more than half the market capitalization of America's public companies; and that today intangible assets represent 70% of the value of S&P 500 companies — rising from 20% in 1980.

#### (iv) Growing levels of workforce diversity

Companies operate in an increasingly globalized environment and must manage widely dissimilar employee populations, markets, cultures and modes of work. While cultural issues and conflicts are challenging for multinational organizations, migration and the globalization of customers, suppliers and investors brings diversity into domestic companies. The level of ethnic, cultural, generational and gender diversity of individuals working within a single organization and indeed, within a single office, is increasing. In addition to greater cultural and national diversity, organizations are faced with wider generational diversity. Individuals born in the same time period share a common history that creates common experiences and may influence the attitudes, behaviors, and work styles of generational “peer personalities”. The demographic trends described earlier mean that in many workplaces, three, and sometimes four, generations are working together— from ‘Veterans’ and ‘Baby Boomers’ to Generations ‘X’ and ‘Y’. Generations with very different values and expectations sit side-by-side and often, younger employees manage older, more experienced people. This cross-generational workforce can be a source of conflict or a source of learning, productivity, and innovation for organizations.

## MOROCCO'S CASE

Morocco's economy is an emerging economy which has experienced rapid growth since the early 1980s. Between 1985 and 1995, Morocco experienced the highest growth rate in the region. The rapid economic expansion led to an increased demand for and an under-supply of managers and professionals in the country.

Morocco has taken measures such as reforms in schooling to address the talent shortages and aging population. However, there are reports that current reforms in education need to be taken further if the Moroccan education system is to provide the required talented labour. Furthermore, in order for Morocco to take the next step towards a dynamic and knowledge-based world economy, as desired by its government, there is need for structural reforms not only in the education systems but also in its system of employment.

One of the areas that such reforms need to target is untapped female potential. The consensus view in Morocco is that education can help overcome the underutilization of female potential in employment. Many studies of gender pay gaps found only partial support for this assumption.

Although the increase in female education resulted in some narrowing of the gender pay gap, superior education levels of the female workforce did not lead to a reversal nor did it lead to the disappearance of the earnings gap between men and women in the country.

Research papers argue that legislative and educational reforms resulted in an improvement to women's labour market status, but there are still barriers to women's advancement to managerial positions.

Interestingly, some scholars suggest that discrimination against women is imported by international firms operating in the country. However, the culture in Morocco remains influenced by patriarchal values, which portray women as dependent and maintain prejudices about women's ability to perform in managerial roles (Virakul, 2000). Studies also demonstrate the presence of organizational barriers for women's career advancement.

In the civil aviation field, we have seen great development in Morocco since many women hold positions as Pilot Officers, Air Traffic Control Officers, Air Traffic Safety Electronics Personnel (ATSEP), etc. For example, within five years, the Civil Aviation Center (AIAC) has managed to make recruitment and training equal between male and female candidates. Now, women are delivering full and satisfactory performance in an operational environment.

## CONCLUSION

Our definition of strategic talent management – as activities and processes that involve the systematic identification of key positions which differentially contribute to the organization's sustainable competitive advantage, the development of a talent pool of high potential and high performing incumbents to fill these roles, and the development of a differentiated human resource



architecture to facilitate filling these positions with competent incumbents and to ensure their continued commitment to the organization – emphasises the identification of pivotal positions as the point of departure for strategic talent management systems.

For an organization to fully exploit the potential of their internal talent, they must first identify those positions within the organization which have the potential to differentially impact on performance. The central contribution of this paper is that considering talent management and gender equality together may offer a creative, albeit partial, solution to address often reported talent shortages in the civil aviation field.

Women have made inroads in all disciplines of education, and resultantly the face of talent has irreversibly changed in the region. However, women at work still suffer from traditional gender norms, which limit the full use of their talent at work, and block their access to managerial and leadership positions. We illustrate the utility of gender quotas to draw attention to gender bias and untapped female potential in the region. Our manuscript contributes to the debate on the utility of quotas as a catalyst for organizations to consider deeper cultural change to recognize the untapped potential of women, who make up half of the talented graduates in the region. ■

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# BUILDING A HUMAN RESOURCE STRATEGY PLAN BASED ON COMPANY CORE COMPETENCIES



## ABOUT TANG YANHUA

He is Deputy Director of the HR Department of the Commercial Aircraft Corporation of China, Ltd. (COMAC). He holds a Phd in Business Management from Shanghai Jiaotong University. He joined COMAC in 2008 and is responsible for education and training in the company. He has considerable experience in employee training, HR planning and organizational career management.



## COMAC'S STATUS IN AVIATION

The Commercial Aircraft Corporation of China Ltd. (COMAC) was established in Shanghai in May, 2008. COMAC is a state-owned major company which functions as the main vehicle for implementation of large passenger aircraft projects in China. It is also mandated with the overall planning of the development of trunk liner and regional jet programmes and the realization of the industrialization of civil aircraft in China.

First, with regard to the main objectives of COMAC, as we know, China is undergoing a key period of economic transition and industrial upgrading, and the civil aircraft industry is a top priority in manufacturing. It will enhance the level of scientific technology, industrialization and manufacturing throughout the country. This is the reason why we need a powerful aviation industry to strengthen our economy.

Second, because it is a rapidly developing country, China's demand for aeronautical products is exploding. As well, being a large-scale economy and manufacturing nation, China hopes to make a great contribution to the worldwide aviation industry within the scope of the country's capabilities.

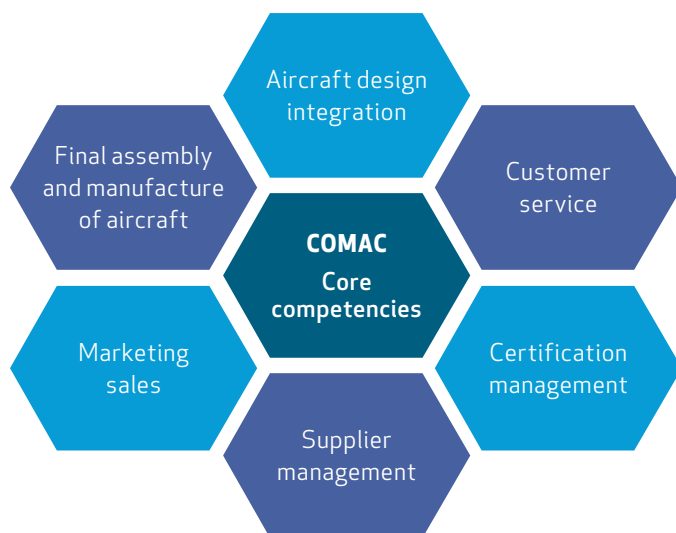
Based on international practices for developing civil airplanes, COMAC has adopted an "airframe-suppliers" model focusing on six core capabilities as follows: aircraft design and integration, final assembly and manufacture of aircraft, marketing sales, customer service, airworthiness certification and supplier management. COMAC adheres to a policy of self-reliant progress in marketing, integration, local sourcing and global cooperation. The company endeavors to manufacture large passenger aircraft that are safe, economical, comfortable and environmentally friendly, and is determined to be a world class commercial aircraft manufacturer.

Currently, COMAC has multiple member divisions as follows: the Research and Development Center, the F/A and Manufacturing Center, the Customer Service Center and the Flight Test Center.

Two product lines are under development: the trunk liner C919 and the new regional jet ARJ-21. The C919 is a short-medium range commercial trunk liner. Its all-economy class layout is 168 seats, and the hybrid class layout 156 seats. The basic version is designed to cover a range of 4,075 km. while the enhanced version can be stretched to 5,555 km. The ARJ-21 is a short-medium range regional jet liner. There are 78 seats in a dual-class configuration and 90 seats in a full economy class configuration. The range of the standard ARJ21 is 2,225 km, and the maximum range 3,700 km.

## THE NEED FOR A HUMAN RESOURCE POOL BASED ON COMAC'S CORE COMPETENCIES

Being a commercial aircraft OEM, COMAC has set forth a "six core capabilities" goal as follows: to achieve the capabilities of aircraft design integration, final assembly and manufacture of aircraft, marketing sales, customer service, certification and supplier management.



COMAC Core Competencies

Aircraft design integration is the process of producing complicated airframes, systems and components and integrating, verifying and validating them successfully. This capability is the essential quality to constructing core competencies and represents the core value for our company.

The final assembly and manufacturing capability mainly includes final assembly, test and laboratory, etc. It is easy to identify by specialty, facilities and the construction of talent pools. This capability is the most important element to guarantee that the flight tests and V&V are implemented successfully and that the batch production and deliveries go well.

Customer service involves flight training, spares support, engineering technical service, documentation, marketing and customer support. This capability will mainly impact the safety of the whole lifecycle, customer maintenance and quick response by the OEM in support of the airplane.

Marketing sales is divided into marketing research and market expansion. The COMAC Marketing Forecast Report is published annually. As well, COMAC continues to strengthen its relationships with governments, clients, suppliers and the media by hosting and visiting many international airshows. This benefits the establishment of our brand around the world and promotes commercial success.

Certification involves approval by the authorities of aircraft or components for operational safety. Certification capability facilitates the progress of our project, guarantees global usage and strengthens the relationship between the enterprise and the authorities.

Supplier management is an efficient path to oversight of suppliers to ensure the provision of satisfactory products and services which helps the OEM to increase the quality of products, reduce the cost and enhance core competencies.

COMAC has established the objective of creating core talent pools and developing a corresponding human resource development strategy based on these six core capabilities.

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Over more than 40 years, the research and development of civil aircraft in China has undergone struggling exploration and extraordinary hardship. Many projects failed to succeed for a variety of reasons, and many educated and talented individuals have left in large numbers. At present, the ARJ21 has entered into TIA, while the C919 has moved to the CDR phase from the PDR phase. The development lifecycle is limited and tasks are critical, which is placing higher demands on our personnel.

We face the following tasks when we construct our specialist teams:

- (1) **To expand the scale of specialist teams.** Currently, our company is focused on the construction of the R&D Center, the F/A and Manufacturing Center and the CS Center. However, COMAC still has a shortage of designers and manufacturing workers, and a lack of talent with respect to the certification and customer service areas. A definite gap exists between the actual number of experts and the required number within COMAC, which leads to the critical task of solving the issue of meeting the need for professional experts.
- (2) **To improve the specialists structure.** The age and specialty distribution of our professional talent pools is unbalanced. The age distribution in COMAC (the composition of old, middle-aged and young personnel) appears to be saddle-shaped. The percentage of young engineers under 35 years of age is above 50%. Compared to similar companies, the team appears to be inexperienced yet energetic. With regard to specialty distribution, the number of personnel in R&D and F/A and Mfg. areas is obviously much higher than the number of experts in Customer Service, Marketing Sales, Certification and Supplier Management. This weighting can be harmful to the balanced and coordinated development of our products.
- (3) **To enhance the professional quality and capabilities of specialists.** By adopting the international strategy for development, COMAC put forward a general goal: to be a world-class commercial aircraft corporation. Currently, compared with the well-known western airplane OEMs, we still have a long way to go to catch up with respect to specialties and capabilities. The company is especially lacking high level experienced experts in developing airplane projects, and in great need of the international talent familiar with international standards, best practices and conventions for supplier management, marketing and airworthiness. To a certain extent, this shortage of high level experts and international talent impacts the forward progress of our project.

#### AN EDUCATIONAL METHOD TO DEVELOP THE CORE HUMAN RESOURCE POOL IN COMAC

Considering the lack of core talent, we searched for an efficient way to develop overall experience and knowledge, as well as cultivate experienced designers and engineers within COMAC to strengthen our talent pool. We analysed our requirements and developed a plan in combination with the import and export of experts. We have achieved some remarkable results.



The flight test engineer is ready for the flight test

#### 1. Speeding up the cultivation of talent

By fully utilizing the global perfect educational resource, our company sends a significant number of excellent technical personnel abroad to study and practice. As a result, these individuals return to become test pilots, flight test engineers, certification engineers and systems engineers. For example, we have developed good cooperation with NTP. Now, more than 20 test pilots and engineers have been trained. By collaborating with the University of Kansas and German Lufthansa, we have trained over one hundred certification engineers and more than a hundred skilled operators. On the other hand, through the encouragement of specialty training and position rotation, we have also cultivated dozens of systems engineers.

#### 2. Promoting excellent technical specialists

We send excellent designers, engineers, manufacturing workers and technicians to participate in special training to strengthen their theory, knowledge and practical experiences with respect to advanced development methods for civil airplanes and manufacturing skills. Through the master-apprentice model, we encourage young technicians to gain more experience from older experts and to advance their skills as soon as possible.

#### 3. Enhancing the quality and capabilities of core specialists

We send related personnel to participate in special training with respect to project management, supplier management, marketing and sales. By keeping in touch with well-known suppliers, such as GE, Honeywell and UTC, etc., we jointly organize some training to share our project management and supplier management experience, so as to broaden our view and enhance our quality and capabilities.

#### CONCLUSION

The net result of these actions has been to strengthen our core competencies and to build a stronger team of talented experts who will nurture the younger, talented personnel within our organization. While the work is not complete, COMAC has established a plan to meet our strategic human resource needs for talent and expertise into the future. ■

# HR PLANNING AND DEVELOPMENT



## ABOUT ELEONORA SURINA, PHD

She has over 20 years of experience in Human Resource Management (including HR personnel training and psychological consulting in aviation). In 1995, she was recruited to the position of Aviation Psychologist at Volga-Dnepr Airlines where she was responsible for developing and delivering human factor and CRM-related training programmes to aircrews and maintenance staff as well as carrying out pilot personality assessments. Simultaneously, she was the Senior Lecturer of the Flight Operations Safety Department in High Pilot School. Today, Eleonora is Deputy HR Director for the whole VD Group of Companies.



## AWAITING THE FUTURE OR MAKING IT HAPPEN?

The success of a company in any industry, even the most high-tech, depends on putting "the right people in the right places". This golden rule works, especially today in the world of continuous technological advancement and globalization. In aviation particularly, the concept of "human capital" plays an increasingly vital role, hence the reason why the largest aircraft and logistics players in the market are developing long-term HR strategies that are structured by what is happening today and what is coming in the near future. A significant and integral role is now being played by the experts that work in the fields of human capital and corporate education.

## NEW RULES FOR A NEW ERA

A key consideration in undertaking long-term planning is to carefully consider global trends that influence the labor market. Technological developments will inevitably lead to lower cost, more innovative products. The expanding development of machines that replace the work of people will gradually reduce workplace staff numbers. In 20 years, upwards of 5 billion people will have Internet access. The digitization of global knowledge, 24/7 access to information and user-created content will turn educational institutes and universities into the world's powerhouses. The significance of social networks will rise, and they will influence economies and world labor specialization.

Labor processes will also be influenced by demographic changes. The ratio of elderly people to the younger generations continues to grow in many countries. An on-line poll of aircraft industry HR specialists has shown that 75% of companies expect a significant increase in the number of employees 50 years of age and older among their staff members in next 20 years. Gender equality and the increase in the number of part-time jobs will provide opportunities to work for many more women. As a result, they will strengthen their leadership positions and begin to play an increasingly important role in company management. The number of female CEOs is expected to double in the next 10 years. International migration will increase due to the severe lack of skilled professionals in highly developed countries as well as ecological change.

## PROBLEMS IN THE AVIATION INDUSTRY

Manpower shortages are already affecting aviation and this issue is projected to continue in the future. HR experts state they are experiencing difficulties with the recruitment of flight and technical personnel, and, according to their future forecasts, the situation will only get worse. In order to reduce manpower costs and remain competitive, aviation companies have begun to include consolidation in their business strategies. They are also focusing on Talent Management strategies to ensure retention of professionals in the industry.

In order to meet the labor market demand for a qualified work force by 2020, it is necessary to actively collaborate with educational institutions as soon as possible. However, the industry still hasn't developed uniform professional standards and clear job descriptions to properly define what is required to meet this labor market demand. The absence of these uniform standards and criteria results in a lack of

activity coordination among industry members, educational institutions and the government, consequently detrimentally affecting the quality of the labor supply in the market.

74% of companies face the need to modernize knowledge and skills, as well as increase the labor productivity of current personnel (by personnel I refer not only to pilots and technicians, but also to upper management). A deficiency of internal leadership and lack of newly recruited “big bosses” negatively influences the company’s performance, and, in turn, overall profits.

### THE ROLE OF HR IN AVIATION

Globalization has increased the need for greater HR expertise, especially in the fields of recruitment, talent management, development (both staff and organizational development) and training.

Airlines are increasingly reducing their use of recruitment agency services. 50% of them have their own recruiting portals, 39% use on-line tests for candidates, 22% have on-line training systems. 47% of integrated aircraft companies have their own aviation training centres, and half of them also provide training services to other organizations. Within the next 20 years, the majority of aviation companies will continue investing in their HR IT-infrastructure, personnel assessment systems and on-line training.

The HR specialist’s role is remarkably valuable and produces tangible results in a variety of areas, from HR-branding to best practice transfer management. The HR function is pivotal in the development of corporate culture, communication and implementation of ethical values and the promotion of Group identity. The HR specialist’s main aim is to promote loyalty and commitment to the organization and its strategy, and consequently to change the internal perception away from mere “blind loyalty” without concrete long-term commitment.

HR experts analyze the main trends in the company’s development and proactively offer solutions to potential problems. HR’s ability to share a common language with industry representatives and set high quality standards of work for the company firmly establishes HR as a core function in the organization globally.

The main components of HR success are quite simple and obvious. A company should stick to its HR strategy, ensuring flexibility and alignment to the organizational strategy. The formulation of core values that unite people globally is also within the skill set of the HR profession. In order to ensure efficiency, it is necessary to optimize organizational structures and to unify procedures through the use of common standards and consistency of policy and procedures on a global scale.



An international company's recruitment strategy should reflect the centrally set core standards globally throughout all of its subsidiaries and branches. Moreover, many aviation companies should, and many do, practice staff rotation between international offices and departments.

All HR processes must be focused on realization of the business strategy. This process demands the creation of knowledge centres to accumulate best practices and to give staff an opportunity to share and receive all the pertinent information as soon as possible.

In the long-term the most important HR goal is to "raise" modern leaders, focusing their key motivation towards teamwork rather than ego-satisfaction, to create an attractive company brand leading to the creation of a strong HR-brand. HR strives to ensure that each regional branch of an aviation company has a team of qualified and talented professionals that are correctly oriented to ensure the achievement of the company's organizational goals.

At the same time, it is necessary to create an effective system of internal communications and to introduce an HR risk control and monitoring system that takes into account the global and regional trends mentioned above.

Finally, scrupulous work with the younger generations of employees is important. This segment of the labor market may begin their careers in aviation, or may be considering entering the profession. Aviation companies must start to build strong relationships with leading aviation universities and colleges.

It has been proven in many large successful companies, that the HR-brand is a financial instrument that makes a considerable indirect profit over the long term. According to experts, at first it is necessary to build HR-brand loyalty among current employees who then, in turn, communicate the principles and core values of the company to the market, to both current and future customers, and to potential talented, qualified employees.

The leading role in all these undertakings belongs to pivotal HR practices and corporate universities, which satisfy the needs of companies for top management, flight and technical personnel training and development.

#### **VOLGA-DNEPR CORPORATE UNIVERSITY - LEARN MORE, FLY HIGHER!**

Since its foundation, Volga-Dnepr has paid close attention to the training and development of personnel. Like many of the world's major corporations, Volga-Dnepr was one of the first in Russia to create its own Corporate University in 2001. This institution has been reshaped many times since, in concert with the Group in order to consistently reflect its strategy. One of the keys to our company's long-term success has been the university's ability to transform itself from an administrative to a business orientation. The corporate university is an integrated system of learning and development. It



consists of three schools and two centres: the School of Leadership, the School of Management and the School of Foreign Languages, the Aviation Training Centre and the Knowledge Management Centre.

The main target of the Leadership School is not only the creation of effective leaders but the support of corporate leadership development. It exists to help the group to excel and enhance the effectiveness of their efforts to fulfill the strategic plan. Education takes the form of business sessions, engaging the best experts within the company to use their own experiences and to benchmark them within the industry to establish best practices.

The School of Management is dedicated to creating an environment which promotes the constant professional growth of our staff. Our employees are invited to benefit from our programmes to broaden their skills and competencies. The school courses are particularly beneficial for administrative managers, line managers and high potential employees.

The Knowledge Management Center was established to support the company's strategic objectives by converting the know-how of company experts into information assets that can be used to dramatically improve corporate performance, competitiveness and value. The KM centre is responsible for launching, development and monitoring the effectiveness of the KM processes, such as knowledge gathering, organization and storage, distribution and sharing, creation and development.

Companies that are recognized for building great leadership teams have one important characteristic in common. Their leadership teams are deeply involved and committed to teaching, mentoring and developing other leaders. They recognize how critical it is to the continued success of the company to have experienced leaders that share perspectives on company and marketplace evolution, and know-how to hone the skills required for success in the current business environment and global economy.

The many achievements to date illustrate the wealth of opportunities that exist for expanding existing relationships and cooperation with fellow companies in the Aviation and MRO industries, in addition to fostering relationships with advisers and consultants who specialize in a wide range of aviation-specific business challenges. ■



SAFETY		
	Delivery	Contact
Aerodromes		
ICAO/ ACI Aerodrome Certification Course	Classroom + Online	training@aci.aero
Aviation Medicine		
Aviation Medicine Regional Training	Classroom	AEvans@icao.int
Aviation Medicine Concepts for Medical Examiners- Introductory Course	Online	
Aviation Safety Management		
ECCAIRS/ ADREP- Technical Course	Classroom	SafetyTraining@icao.int
ECCAIRS/ ADREP- End-user Course		
Dangerous Goods		
Dangerous Goods Training Part 1 – Using the Technical Instructions	Classroom	SafetyTraining@icao.int
ICAO FIATA Dangerous Goods Training for Freight Forwarders		
Executive Programmes		
Global ACI-ICAO Airport Management Professional Accreditation Programme (AMPAP)	Classroom + Online	registrar@iap.aero
Government Safety Inspectors		
Government Safety Personnel - Personnel Licensing (GSI-PEL), Course 18710	Classroom	SafetyTraining@icao.int
GSI Airworthiness - Air Operator and Approved Maintenance Organization Certification (GSI-Air), Course 18701		
GSI Operations - Air Operator Certification (GSI-Ops), Course 18700		
GSI Operations - Approved Training Organization Certification (GSI-ATO), Course 18718		
Safety Audits		
USOAP CMA Computer based Training (CBT) in the areas of PEL, OPS, AIR, AIG, ANS and AGA	Online	etraining@icao.int
AIR NAVIGATION		
Performance-based Navigation		
Performance-based Navigation (IPBN) Overview Course	Online	atminbox@icao.int
Performance-based Navigation (PBN) Air Space Design Course		
Performance-based Navigation (IPBN) Operations Approval Course		
SECURITY & FACILITATION		
Aviation Security		
Airport Security Programme Workshop	Classroom	isd@icao.int
Aviation Security Certification System Workshop		
Basic Course		
Cargo Course		
Crisis Management Course		
Exercise Course		
Instructors Course		
Management Course		
National Civil Aviation Security Quality Control Programme Workshop (NCASQCP)		
National Civil Aviation Security Training Programme Workshop (NCSTP)		
National Inspector's Course		
Executive Programmes		
ICAO-Concordia University Aviation Security Professional Management Course (PMC)	Classroom + Online	avsec-pmc-cc@jmsb.concordia.ca
ICAO-Singapore AVSEC Leadership and Management Seminar (LAM5)		saa@caas.gov.sg



## 2013 Course Overview

## ECONOMIC DEVELOPMENT OF AIR TRANSPORT

	Delivery	Contact
<b>Economics and Statistics</b>		
Air Transport Statistics e-Learning Course	Online	eap@icao.int
Air Transport Economics and Regulations e-Learning Course		
Forecasting for Air Transportation e-Learning Course		
ICAO/ ACI Course on Airport User Charges	Classroom	

## ENVIRONMENTAL PROTECTION

<b>Environment</b>		
State Action Plan on CO <sub>2</sub> Emissions Reduction Activities and Assistance to States	Classroom	env@icao.int

## ALL STRATEGIC OBJECTIVES

<b>Instructional Design</b>		
Training Developers Course (TDC)	Classroom	trainairplus@icao.int
<b>Train-the-Trainer</b>		
Training Instructors Course (TIC) - Part 1 + Part 2	Classroom + Online	trainairplus@icao.int

## Courses Under Development

## SAFETY

SAFETY	Delivery	Contact
Dangerous Goods Training Part 2 – Training for State Employees	Classroom	SafetyTraining@icao.int
I-Train Programme (in cooperation with IATA)	Classroom + Online	
Safety Management System/ State Safety Programme (SMS/SSP)		
USOAP CMA Computer based Training (CBT) in the areas of LEG/ORG	Online	etraining@icao.int

## AIR NAVIGATION

<b>Performance-based Navigation</b>		
Performance Based Navigation (PBN) for Air Traffic Controllers	Online	atminbox@icao.int
Performance-based Navigation (PBN) for Pilots		
Performance-based Navigation (PBN) for Dispatchers		
Performance-based Navigation (PBN) Air Space Design Course & Workshop	Classroom	
Performance Based Navigation (PBN) Operations Approval Course		

## ALL STRATEGIC OBJECTIVES

<b>ALL STRATEGIC OBJECTIVES</b>		
Training Managers Course (TMC)	Classroom	trainairplus@icao.int

→ More than 30 TRAINAIR PLUS Standardized Training Packages (STPs) developed by Members of the TRAINAIR PLUS network are available and may be consulted at [www.icao.int/trainairplus](http://www.icao.int/trainairplus). For enquiries about these STPs, please contact [trainairplus@icao.int](mailto:trainairplus@icao.int).

# AN INTERVIEW

## WITH MRS. PAULA VIEIRA DE ALMEIDA BUSINESS DEVELOPMENT MANAGER, JOINT AVIATION AUTHORITIES TRAINING ORGANISATION (JAA TO)



### ABOUT PAULA VIEIRA DE ALMEIDA

*She holds a Master's degree in Adult Education – Leadership and Management, having written her thesis on Implementation of Online and Distance Learning in Aviation Safety. Following the closure of the Joint Aviation Authorities (JAA), where she started her employment in August 2004, she has worked for JAA TO since its establishment under the umbrella of ECAC in July 2009. As Business Development Manager, Paula is the head of JAA TO's Course Development Unit (CDU), managing development of the organization in collaboration with JAA TO's Faculty Managers for Training Curricula, and is also responsible for the development and implementation of learning solutions. Paula reports directly to JAA TO's Director, Mr. Joost Jonker.*



The Joint Aviation Authorities Training Organisation (JAA TO) joined the ICAO TRAINAIR PLUS Programme as an Associate Member in March 2011 and transitioned to Full Membership in September 2012 when it developed its first Standardized Training Package (STP).

JAA TO is an associate body of the European Civil Aviation Conference (ECAC). It offers high quality training courses on European aviation safety rules and regulations to both authorities and industry personnel. It is active globally, offering both scheduled training courses and customized on-site courses. JAA TO has provided services to nearly 1,600 organizations worldwide, including all 44 ECAC Civil Aviation Authorities and a variety of Civil Aviation Authorities outside of Europe.

Mrs. Paula Vieira de Almeida generously accepted to answer questions regarding JAA TO's experience on the development of the organization's first TRAINAIR PLUS STP as well as provide feedback on its involvement in the TRAINAIR PLUS Programme.

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“As instructors are crucial for the shaping of future aviation professionals, it is essential that they not only are aware of, but also know how to use the tools with which their learners are most familiar.”



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Continuing the tradition of innovation and excellence that built a legend, Pan Am International Flight Academy offers more training programs on more aircraft types than any other airline training organization. From beginning cadet pilot programs to type ratings on the B787, the world's airlines and aviation professionals turn to us for customized training solutions to meet their needs and save training dollars.

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## YOUR TRAINING ORGANIZATION WAS ONE OF THE FIRST TO JOIN THE TRAINAIR PLUS PROGRAMME. WHAT MOTIVATED YOU TO JOIN ICAO'S GLOBAL TRAINING NETWORK?

Being a non-profit foundation established as an associated body of ECAC, JAA TO focuses first and foremost on being fully supportive of the initiatives of ECAC, EASA, the EU and ICAO in their aviation safety efforts within and beyond Europe. We also aim at continuously forging strategic cooperation with national, regional and international organizations and institutions. The TRAINAIR PLUS Programme has offered us the opportunity to address both organizational goals: embrace ICAO's initiative, learn and apply this new international course development methodology, and at the same time, become part of a global network of training organizations engaged in developing course materials in the same standardized way, in addition to sharing with them not only the training packages, but also knowledge, experience and resources for the implementation of joint development.

## THE TRAINAIR PLUS METHODOLOGY IS BASED ON THE APPLICATION OF SYSTEMS ENGINEERING METHODOLOGIES TO THE DESIGN OF TRAINING CURRICULA. IT RESULTS IN THE DEVELOPMENT AND THE IMPLEMENTATION OF STRUCTURED PERFORMANCE, COMPETENCY-BASED TRAINING PROGRAMMES. WHAT

## WERE THE BENEFITS OF APPLYING THIS COURSE DEVELOPMENT METHODOLOGY FOR THE DEVELOPMENT OF YOUR STP?

When developing training courses within our Course Development Unit (CDU), we make use of the Instructional Systems Design (ISD) model, which is, to a large extent, in line with the TRAINAIR PLUS Methodology (TPM). Adopting the latter has increased our standardization of training courses and enhanced the quality of our course materials. In addition, our efforts to meet the requirements of the TRAINAIR PLUS Programme have refined our organizational structure. Some aspects of the TPM have already been adopted by our CDU as part of our quality system and this has certainly contributed to smoother cooperation between our Subject Matter Experts and the CDU.

## A TRAINAIR PLUS COURSE VALIDATOR SUPPORTED THE VALIDATION OF THE 3-STAGE PROCESS DURING THE DEVELOPMENT OF YOUR STP. HOW IMPORTANT WAS THE ROLE OF THE VALIDATOR OF YOUR STP?

Captain Mostafa Hoummady's role was very important for our STP design, development and validation. His guidance encompassed very clear instructions on how to implement the methodology. He also contributed as an excellent Subject Matter Expert with bright ideas for fine-tuning the course contents.

## TRAINAIR PLUS STPs

Members of the TRAINAIR PLUS Programme have been prolific developers of STPs. As of September 2013, 25 STPs have been validated by the TRAINAIR PLUS Programme and an additional 35 are currently under development. All validated STPs are uploaded in the virtual library located in the TRAINAIR PLUS Programme electronic Management System (TPeMS), reserved for members of the network.

A training package refers to the physical assembly of training material for the instructor and the trainee in a self-contained, manageable form. If the training package complies with ICAO's TRAINAIR PLUS standards, it becomes a Standardized Training Package (STP) and is issued a TRAINAIR PLUS series code.

Each STP contains a step-by-step guide for the instructor, all reference material required by the trainee, a full set of tests, exercises, model answers and scoring keys, as well as presentation material used in the course. All STPs are validated by the TRAINAIR PLUS Programme to ensure that they have applied the TRAINAIR PLUS methodology, based on the ICAO *Training Development Guide, Competency-based Methodology* (Doc 9941).

Some 60 training centres from 55 States are currently Members of the Programme. The majority have trained their course developers on the TRAINAIR PLUS methodology, have set up a Course Development Unit (CDU) and are in the process of developing STPs to be uploaded in the virtual library and shared with Members of the network.

For more information on the TRAINAIR PLUS Programme and STP development, visit [www.icao.int/trainairplus](http://www.icao.int/trainairplus) or email the Programme at [trainairplus@icao.int](mailto:trainairplus@icao.int).



### THE STP YOU HAVE DEVELOPED IS ENTITLED **ONLINE INSTRUCTIONAL TECHNIQUES**. WHAT PROBLEM ARE YOU TRYING TO RESOLVE THROUGH THIS COURSE? WHAT NEW TECHNIQUES WOULD YOU ADVOCATE FOR THE NEW GENERATION OF TRAIN-THE-TRAINER COURSES?

The Online Instructional Techniques STP (211/009/INS TECH IN) is specifically targeted at pre-service and in-service trainers with little or no formal training background, with the aim of providing them with basic instructional skills, knowledge and techniques, as well as contemporary methods, which will enable them to prepare and be ready to deliver training courses in an efficient and effective way.

We have developed this course keeping in mind the students whom our trainees will be instructing – the next generation of aviation professionals. These are learners who are used to acquiring knowledge, skills and attitudes through non-conventional ways, individuals who spend a great part of their day in front of screens (watching TV, using mobile devices, gaming). They are digital learners.

As instructors are crucial for the shaping of future aviation professionals, it is essential that they not only are aware of, but also know how to use the tools with which their learners are most familiar. If we are to keep up with the pace of today's generation, innovative learning methods are essential. Educating professionals with state-of-the-art and high-quality training resources is one of the keys to success in molding the future of aviation safety. These and other aspects are all addressed by our STP.

### WHAT ARE YOUR MIDDLE AND LONG TERM VISIONS WITH REGARDS TO YOUR MEMBERSHIP IN THE TRAINAIR PLUS PROGRAMME?

At this moment we are focusing on ensuring a successful launch of our STP and preparing for the TPP re-assessment. We are very proud to be the first organization in the world to develop an online course within the TPP and envisage developing joint STPs with other renowned organizations who are members of the Programme, as well as contributing to making TRAINAIR PLUS even more comprehensive and successful through our participation in the TRAINAIR PLUS Steering Committee (TPSC).

### WHAT ADVICE WOULD YOU GIVE TO OTHER TRAINING ORGANIZATIONS WHO WOULD LIKE TO JOIN THE TRAINAIR PLUS PROGRAMME?


We definitely recommend that training organizations join the TRAINAIR PLUS Programme. We would advise them to start with ensuring the establishment of a Course Development Unit with at least one experienced educational professional who can be responsible for coordinating the involvement of the Subject Matter Experts and other specialists in successfully developing an STP according to the TRAINAIR PLUS Methodology. The Programme has a self-sustaining budgetary mechanism which, combined with the STP sharing system, represents a powerful tool for not only enhancing the quality of competency-based training curricula, but also bringing the training organization to an international level with a high-quality standardized course design and development methodology. ■

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# 10 BEST PRACTICES FOR ENSURING A SYSTEMATIC APPROACH TO AIRPORT SAFETY



## ABOUT DONALD HOULE

Donald has been with ADM since 1999. He started with the Airport Patrol as a Shift Supervisor, and then was named Operations Coordination Centre Chief before being appointed Assistant Director of Operations – Planning and Coordination. Donald was also a member of the Canadian Armed Forces for more than 18 years as a military policeman.



When it comes to air transportation safety, the old maxim that “an ounce of prevention is worth a pound of cure” certainly rings true for airport administrators. In an era of heightened uncertainty and rapid growth in air traffic volume, meticulous planning, thorough preparation and constant vigilance are a must to ensure the travelling public is protected at all times – and that when emergencies do occur, the negative impacts will be mitigated to the greatest extent possible.

In developing an effective emergency management system, adopting a systematic approach is critical. This should encompass planning and preparation, including adequate training and drawing up a comprehensive emergency measures plan; effective communication and coordination with various stakeholders; and regular emergency exercises.

Aéroports de Montréal (ADM), the airport authority responsible for operating Montréal-Trudeau and Montréal-Mirabel International Airports in Canada, has incorporated 10 best practices into its emergency management system to ensure its success.

## 1. MAKE SAFETY PART OF YOUR MISSION

Safety should be a key value in airport managers' mission statements. They should also make a firm commitment to develop, implement and constantly improve strategies, management systems and processes to ensure that their performance in safety matters meets or exceeds regulatory requirements and international standards. Moreover, the safety of airport operations should be an intrinsic component of management responsibilities at all levels of the organization. Being held accountable is the best way to ensure that personnel assume ownership of this critical aspect of airport operations.

## 2. DEMONSTRATE LEADERSHIP

Airport authorities, rightly or wrongly, are perceived by the public as being responsible for all operations at a given airport, from the cleanliness of washrooms to the response given to aircraft emergencies. Accordingly, it is important that they provide leadership when it comes to managing or coordinating safety and emergency response measures related to airport operations. Indeed, whether or not an incident has been successfully managed is often based on the perception of victims and observers.

## 3. HAVE THE RIGHT RESOURCES

Having technically competent personnel on staff who are also skillful negotiators is essential to proper emergency management. In addition, it is important to have the ability to effectively leverage partnerships and their resources, as well as to provide the appropriate physical infrastructure and value-added equipment allowing for an effective response to any emergency situation.

## 4. BE METHODICAL IN IDENTIFYING AN EMERGENCY SITUATION

There are four fundamental steps to follow in handling an emergency. The first is to establish as clear a picture as possible of the situation during the initial critical phase. The second is to plan and organize timely intervention. The third is to communicate these effectively with all stakeholders involved. And finally, it is important to maintain

control over the events at all times. In all of these, the priority is to save lives, minimize material damage, restore airport operations to their normal level as quickly as possible, and support government agencies in their subsequent investigation of the incident.

#### 5. BE STRATEGIC WHEN MANAGING A “TRANSITION”

Transitioning from a “normal situation” to an “emergency” mode first requires determining whether or not a situation requires activation of the emergency measures plan. Once this is done, an alert is sent out, a command structure established and an initial status report of the situation issued. Strategic concerns in managing an incident include ensuring that emergency operations have priority while maintaining equivalent levels of service at the airport when it is safe to do so; controlling access to restricted areas and protecting designated sites; maintaining good airport and public communications; and keeping a thorough record of all decisions that are made. Transitioning back to normal operations subsequent to an emergency event entails several steps, including: declaring that the emergency has ended; overseeing the return to normal operations; restoring the usual management structure and controls; debriefing; and collecting all records of decisions made.

#### 6. PROVIDE COMPREHENSIVE TRAINING AT ALL TIMES

Training is, of course, critical to any emergency management system. Basic emergency training should be the same for all personnel, regardless of whether they are new hires or have many years of experience. The priorities of a training programme include ensuring that employees have excellent knowledge of their environment, such as the physical layout of the airport – the site, runways, water systems, buildings, aircraft gates and all other facilities. Employees also need to be aware of the airport authority’s various departments and their roles, as well as the assistance they can provide in the event of an incident. Another essential aspect is knowledge of the airport authority’s various partners, including government agencies, airlines, municipalities, and what role they will have during an incident. Finally, employees must be given extensive training on the role and actions assigned to them in the Emergency Response Plan (ERP).

In addition to individual training, ADM frequently holds training sessions with its various partners to ensure emergency preparedness. These partners may include an air carrier, local police forces and ambulance services, the Canada Border Services Agency and the U.S. Customs and Border Patrol, to name a few. During such group training, the same basic principles apply, including explaining the roles and responsibilities of stakeholders defined according to the ERP. Outside assistance may also be used to supplement in-house training. Training programmes such as those provided by Airports Council International (ACI) and other specialized partners are key elements to the overall training portfolio at ADM.

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In an era of heightened uncertainty and rapid growth in air traffic volume, meticulous planning, thorough preparation and constant vigilance are a must to ensure the travelling public is protected at all times – and that when emergencies do occur, the negative impacts will be mitigated to the greatest extent possible.



These various aspects of emergency management training are found in ACI's Global Safety Network (GSN) Diploma Programme along with the ACI-ICAO Airport Management Professional Accreditation Programme (AMPAP). This is also soon to be supported (end of 2013) by an ACI Emergency Planning Handbook that has been developed jointly by the ACI Safety Department and the World Safety Standing Committee in which member airports such as ADM are actively involved.

### 7. COORDINATE, COORDINATE, COORDINATE

Every airport authority should conduct emergency exercises on a regular basis to test their emergency plans and preparedness and make appropriate adjustments as warranted. Coordination with the various stakeholders when planning an exercise can be very complex and must take into account the following factors: the time of year and availability of participants; the number of participants; the role of each participant; the need for a given participant to be involved. But the most important element is to coordinate with the appropriate people in order to design an exercise that will meet the targeted objectives and optimize the participation of partners.

At ADM, emergency exercises begin with the need to improve a given aspect of airport safety. Several criteria must be met before an exercise is approved by the Director of Operations:

- What is the main objective to be achieved?
- Has an initial scenario been developed?
- Are all sought after partners available or interested?
- Are necessary materiel and/or funds available?
- Is there a plan to mitigate the impacts of the exercise on the level of service provided?
- Are all participants' interests being met by the exercise?

### 8. HOLD REGULAR SIMULATED AND FULL EXERCISES

A major emergency exercise is held at each of ADM's two airports – Montréal-Trudeau and Montréal-Mirabel – on alternate years, while several smaller simulation exercises take place every year. A calendar of exercises is published by ADM on a yearly basis.

A simulation exercise consists of giving members of ADM's emergency team or a partner practice in one or more aspects of the airport ERP without activating the full deployment of specialized stakeholders. This may take only a few hours. Major exercises, in contrast, are coordinated and prepared at least six months before the date of the exercise. In addition, depending on the section of the emergency plan to be tested, coordination may include more than 200 participants – a considerable challenge!

### 9. ESTABLISH AN EMERGENCY COORDINATION CENTRE

As part of its commitment to excellent safety management, ADM has established an industry-leading Operations Coordination Centre which also encompasses an Emergency Coordination Centre. The centre is a specialized work environment that is governed by strict standards and procedures designed to protect lives and property. It is responsible for responding rapidly and effectively in the event of any emergency situation, bringing in all appropriate stakeholders to assist in implementing the ERP. These range from airport security personnel to Montréal region police forces, fire departments and ambulance services, among others. When the plan is activated, the centre is the strategic gathering place for all stakeholders responding to an emergency.

### 10. ENSURE THAT SOMEONE IS IN CHARGE

ADM's Emergency Coordination Centre is headed up by a director who is responsible for determining the severity of an incident and its impact on the operations of the two Montréal airports. He/she also activates the emergency measures plan as needed, and coordinates its execution and management, working 24/7 if needed, until the return to normal operations. Having a single expert in charge ensures that proper leadership and management are leveraged to ensure successful safety management.

In all of these important elements making up an effective emergency management system, it is critical to develop and provide an appropriate training programme – and deliver it to your team members and partners on an ongoing and regular basis. At ADM, emergency operations training remains a top priority and is subject to continuous improvement to ensure a world-class performance in this vital aspect of airport operations. ■



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\*As of 21 October 2013

# HUMAN FACTORS TRAINING

## At the core of all interactions between systems and human beings



### ABOUT EDWARD E. BARBEY

Initially trained as a military and civil paramedic with a specialization in Advanced Trauma Life Support (ATLS), he also became a commercial pilot and has participated in some 3,500 Medevac missions worldwide (helicopter and jet) both as a member of the flight crew and in a medical crew position.

He entered the safety management field by training in HF, CRM, SMS, FRMS and NOTESHS. He now leads the Safety Training Education Programme (STEPAVIA) of Inuk International, Aeronautic Safety Training (Canada).



One cannot discuss aviation without considering human performance. This performance is and will always be governed by a number of factors. The purpose of this article is to examine the merits of Human Factors (HF) training programmes.

Aviation has evolved as an ultra-safe transportation system for over 30 years. The overall degree of safety can be described numerically by assigning it a score of  $10^{-6}$  (one accident per million). However, given the projected doubling of passengers, flights and aircraft by 2025, can this level of safety be increased or even maintained?

The answer to this question may well reside in the quality of HF training programmes that are developed over the next decade.

To be aware of and clearly understand the relevance of an HF training programme, which takes into account the system, (aviation), human (operator) and the scientific discipline (Human Factors), it is fitting to briefly describe each of these terms, which are known as “the 3 fundamentals”.

Anthropologists agree that humans differ from other animal species as the result of cultural faculties that provide us with our intellectual capabilities. But our ability to perform very complex tasks is easily impaired by stress, lack of sleep, fatigue and

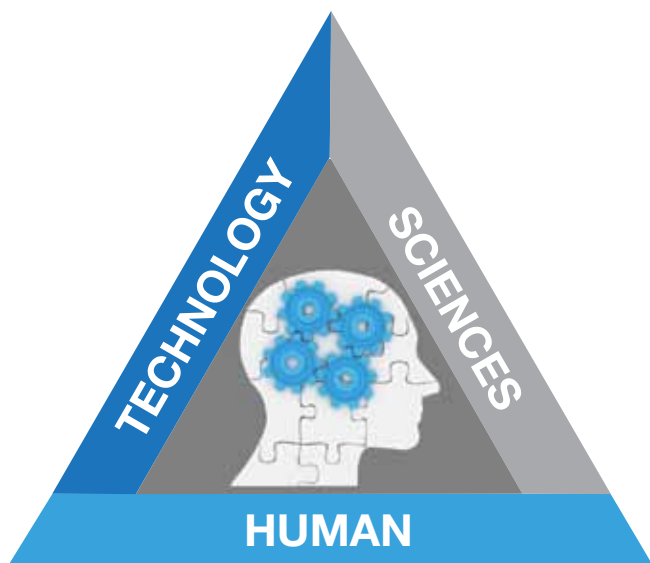
many other factors such as the use of controlled substances like medications and alcohol. Under these influences, we can become unproductive, unable to process information adequately, prone to making incorrect decisions in critical situations and, in extreme cases, debilitated to the brink of survival.



### THE HUMAN FACTORS DISCIPLINE: WHERE IT ALL STARTS AND WHERE EVERYTHING HAS AN EXPLANATION.

Essentially, this discipline addresses the relationship between humans, machines and the environment in which they function. It brings together four fundamental scientific notions: psychology, physiology, ergonomics and sociology. From a

technical point of view, this discipline is the source of all programme design and equipment development. Either in the air or on the ground, equipment is necessarily operated and managed by a frontline operator who will have to deal with the growing gap between him or her and technological innovation in terms of memory and information processing speed.



#### IS HF RECEIVING THE ATTENTION IT DESERVES?

Within the aviation community, not all human factors are being taken into account. This is why HF often does not receive the due consideration it should. Within the academic stream, HF training is often perceived as an additional and sometimes "optional" layer of learning. Professionally and practically, the entirety of HF is pigeon holed very often into the Fatigue Risk Management System (FRMS) which, while it is a well-structured and credible system, is too limited in scope with regulatory compliance and labour law as its primary drivers.

#### HOW AVIATION HAS EVOLVED

This change, from the end of World War II to today, has been described in academic circles as the "Evolution of Aviation Thinking". Aviation has passed beyond the pioneer era to the technical, human and organizational era we know today. It has evolved from a traditional approach to safety (TAS) to a Safety Management System (SMS).

#### HUMANS HAVE BEEN CHALLENGED TO ADAPT

In terms of demographics and human performance, there are clear distinctions between "Baby Boomers" and the so-called X, Y and Z generations that have followed. Key among them are how these generations deal with ever-changing technology, communications, communal working environments, the mixing of genders in teams and crews, not to mention attitudes towards career and family.



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## HF TRAINING: THE RESULT OF THE EVOLUTION OF SEVERAL PSYCHOLOGICAL APPROACHES

From Taylorism, Behaviorism and Cognitivism (all precursors to what we refer to today as Human Factors) the discipline is based on the fundamental principle that an organization hires people to deliver human performance (mental or physical) that depends on the position that must be filled (cockpit, air traffic controller, maintenance station, ramp, etc.). However, HF training has undergone six different generations of evolution from KLM-KHUFAC to the current Crew Resource Management (CRM). CRM and its variants (LOFT and NOTECHS) are all extensions of HF training.

## CULTURAL FACTORS

Culture must be strongly considered in the HF training mix. Generally, culture can be defined as the mental software that conditions our values, beliefs and behaviors. To support this definition, we need only look to two of the five dimensions articulated by Gert Hofstede: the Power Index which, at its most extreme point can become a barrier to communication and safety, and Uncertainty Avoidance which may lead an operator to have more confidence in his or her own judgement than the information provided by automation (MCP FMC).

The axiom: *no human activities are culture deprived* is appropriate here. It is equally appropriate to define culture as national, professional, corporate and organizational without forgetting the safety culture, including its component **Just Culture!**. This component of the safety culture must be included to form a solid cornerstone for any HF training programme.

## A NEW GENERATION OF HF TRAINING

There are many HF training programmes that have been designed to accommodate a variety of activity sectors (OPS, AMO, ATS, AGA, GHSPs). These different interpretations and approaches to HF training complicate the process and tend to confuse the trainee because the fact is that there are several options to conduct an HF training course.



To adequately teach the discipline to a diverse audience, it seems practical to build a framework based on a modular approach which could be referred to as Human Factors – New Generation (HF-NG) training. This approach is structured with 75% of the needs for all activity sectors covered by

generic and fundamental HF subject matter (this subject matter is limited to the essentials), while the remaining 25% of the subject matter is designed to meet the specific needs (operational and organizational factors) of each sector of activity.

## HF-NG TRAINING IS BASED ON FIVE KEY PRINCIPLES:

**Scan** further than the eye can see. HF training should not be limited to the behavior and performance of frontline operators.

**Investigate** all aspects of behavior and performance, as subtle as they may be, so that any deviation can be identified, managed and controlled immediately.

**Inform** the frontline operators of the merits of maintaining physical and psychological health through structured fitness programmes adapted to the activities of the job in question.

**Validate** the practical importance of HF intervention by clearly distinguishing between technical and medical, and establishing the Aeronautical Medical Examiner (AME) as an accompanist to a career in aviation rather than an arbitrator with the power to qualify or disqualify based on a “medical”.

**Define** the HF-NG training framework so that the distinction can be made between the generic framework and its complementary modules.

## THE STRUCTURE OF THE HF-NG TRAINING

The HF-NG training structure is remarkably similar to the layout of an airport. The core framework, accessible to all, could be considered the main airport terminal while the complementary modules function as boarding gates that are specific to the sector of aviation that HF training is designed to address (OPS, AMO, ATS, AGA or GHSPs). One complementary module might address the vestibular hypoxia relevant to crew members which has no relevance to ground handling operators while temperature and luminance are much more appropriate to line maintenance activities.

Notions such as “techno-centred” and “anthro-centred” approaches must be taken into account and presented during the training by referring to a cargo compartment, a wheel well of an aircraft or a working station controller (techno-centred versus the cockpit layout and its control panels (anthro-centred)).

## CONCLUSION

It is clear that HF training will always have an important role in ensuring the safety of operations as we adapt to social and technological change. A solid framework for HF training will help improve or at least maintain the  $10^{-6}$  safety record that the traveling public has come to expect of the aviation industry. ■

# THE MPL – A SYSTEMS APPROACH TO PILOT TRAINING – GAINS ACCEPTANCE BY STATES AND INDUSTRY



## ABOUT JIM DOW

He is Canada's nominee on the Air Navigation Commission (ANC) and formerly the Chief of Flight Training and Examinations at Transport Canada and Transport Canada liaison to the Aviation Accreditation Board International (AABI). He chairs the Licensing and Regulation Workstream of the International Pilot Training Consortium (IPTC).



## ABOUT HENRY DEFALQUE

He has 32 years of civil aviation experience as an airline pilot, an instructor and a crew training manager. In 2001, he joined the International Air Transport Association (IATA), where he was Assistant Director for Flight Operations. He was a member of the ICAO Flight Crew Licensing and Training Panel, which developed amendments to Annex 1 – Personnel Licensing including the new Multi-crew Pilot Licence provisions. Henry joined the ICAO Flight Operations Section in 2006, as Technical Officer, to pursue work in the licensing, training and operations areas.



The structure of international standards for pilot licences has been remarkably constant over the many years since *Annex 1 – Personnel Licensing* was first published in 1948. Someone reading them today would find that these early standards are quite familiar. There have been some changes. Standards for the Airline Transport Pilot Licence (ATPL) – Helicopter – came into effect in 1963. The Senior Commercial Pilot Licence (SCPL) was removed from the standards in 1989. So was the Flight Radio Operator Licence (FROL). The Multi-crew Pilot Licence (MPL) entered the standards in 2006. The basic structure of the standards has remained. Requirements are set out for age, knowledge, medical fitness, skill, experience, and flight instruction.

The earliest standards for pilot licences, the ones set out in the annexes to the 1919 Convention for the Regulation of Aerial Navigation, were based on performance. A series of tests had to be passed. The tests had to be taken within a period of one month, could be taken in any order, and each test could be attempted twice. If the candidate passed the tests, and obtained the required medical certificate, the licence was issued. The tests were difficult and they were aligned with the demands of the world of aviation at that time. Over time, the licensing standards evolved and the current structure of international standards for pilot licences rely on prescriptive requirements with much attention being given to experience. The required experience varies according to the licence but total flight time, pilot-in-command flight time, cross-country time, instrument instruction time, with some credit for instrument ground time and night flight time are generally prescribed.

## NEED FOR CHANGE

This traditional approach to pilot licensing has worked well for many years. It still does. Some very good training is done within this structure. But with the emergence of more systematic approaches to training, leaps in the technology of flight simulation and aircraft systems, and changes in the world of air transport, the standards that underpin the traditional approach have prevented the application of other approaches to training, approaches that have proven themselves in other settings, such as the training of air force pilots and other occupations.

Recognition of the need for opening other pathways for training professional pilots was certainly in view when the Air Navigation Commission (ANC) held an informal meeting with the industry in 1997. Before that, the question was discussed at flight crew training conferences. Even before that, as early as the late 70s, there was recognition that the standards were limiting innovation. An ICAO informal meeting on the future of licensing and training standards was held in Madrid in 2000 and this led to the establishment of the Flight Crew Licensing and Training Panel in 2002.

The final meeting of the panel, held in February 2005, was attended by members and observers nominated by eighteen States and six international organizations, as well as by advisers and others. One of the recommendations the panel brought forward – the recommendations were unanimously supported – was a recommendation for a new pilot licence, the MPL.

The MPL is different from other pilot licences. The standards may look familiar – age, knowledge, skill, medical fitness, experience, flight instruction – but there are important differences. The privileges are much more focused than other licences. Although single-pilot aeroplanes are flown in training and solo time is required, there is a clear focus on the privilege to act as co-pilot of an aeroplane that is required to be operated with a co-pilot. This is actually one of several privileges given to the commercial pilot licence. The knowledge requirements for the MPL must be at least equal to those of the ATPL but some states are developing MPL examinations that go even further than the ATPL examinations.

The MPL skill requirements are also unique in referring to required competencies. The training must be conducted in an approved training course, which is not a requirement for other licences. The MPL also stands alone in requiring upset recovery training. The transition to the ATPL is straightforward, except the ATPL may be limited to multi-crew operations unless certain requirements are met to qualify as pilot-in-command for single-pilot operations. And if the holder of an MPL were to lose



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his or her job, the licence is not limited to a particular operator. As with any other licence holder, an MPL holder hired by another operator would have to complete that operator's initial training programme.

### A SYSTEMATIC APPROACH

The MPL is the only pilot licence that calls for the application of a systematic training methodology. Although some hours are prescribed for the MPL – not fewer than 240 hours as pilot flying and pilot not flying – the application of a systems approach means that hours are not the starting point for the design of training. The hours are derived from the design process and in many cases the hours are much greater, in the order of 300 to 400 hours. The methodology requires a careful analysis of the job and of the trainee population. A curriculum is designed to respond to this analysis, with clear training objectives, sequenced to give the most efficient and effective results. Tests are developed to ensure that objectives are being achieved.

Every step of the training is evaluated, not only to assess the progress of the trainees but to assess the effectiveness of the training design. And for the MPL, the evaluation does not end with ensuring trainee mastery of the course objectives; the evaluation looks at how the trainee actually performs on the job in the real world of airline operations. That feedback loop is needed for the continuous improvement of training. Because the training must be conducted within an Approved Training Organization (ATO), a quality system is required and, since the training demands continuous assessment of trainees against benchmarked performance standards, a learning management system is strongly recommended.

### IMPLEMENTING THE MPL

Introduction of the MPL involved more than publishing new standards and waiting for the world to respond. A new Procedures for Air Navigation Services (PANS) document was developed. PANS-Training (Doc 9868) was introduced in 2006,



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with entire chapters designed to support implementation of the MPL. New requirements for approved training organizations were developed and a new Manual on the Approval of Training Organizations (Doc 9841) was published in 2004. A second edition was published in 2012. A State Letter was issued in December 2007, requesting specific data on MPL implementation and training programmes. Only the state information was required to be submitted to ICAO at that stage but the letter indicated that there would be a future request for data on each MPL training programme and each trainee, including the early operational experience and evaluation from the operators associated with the MPL programmes.

When ICAO introduced the MPL, it was expected that global implementation would be gradual. State rulemaking takes time and new training methodologies need to be understood. Whereas some states could adapt their rules for approved training organizations, some needed to develop new rules. As well, some states needed to develop training for the inspectors responsible for the oversight of competency-based training. Now, seven years after the licence entered the global standards, the MPL is becoming established as a safe and effective option for an airline career path. The request for the further data was sent to States in May of this year, with the intention of having the data received and analyzed in time for a symposium on the MPL

to be held at ICAO in Montreal in December 2013. Assistance in this work is being given by the International Air Transport Association (IATA), the International Federation of Air Line Pilots Association (IFALPA), and the Royal Aeronautical Society (RAeS) who are, together with ICAO, collaborating through a body called the International Pilot Training Consortium (IPTC).

We know that as of January 2013, almost 2200 pilots had enrolled in an MPL programme, of which 760 had graduated. We will see these numbers continue to grow and with the data being received and the discussions that will take place at the MPL Symposium, we will learn about the different approaches being taken in the design of the MPL courses. Some will be built from a foundation of existing models of “cadet” training. Others will be new designs, built from the ground up using the systems approach. Some courses will inevitably be more efficient and effective than others but all of them must meet the global standards. Best practices will begin to emerge. Lessons will be drawn from this experience and ICAO will review the standards, procedures and guidance information to make any changes that might strengthen the foundation for the MPL. This has already opened up another path into the pilot profession. It will not be the answer for all co-pilot training but it has become established as a good option that States and industry and prospective pilots have available to them. ■



ICAO

[www.icao.int/td](http://www.icao.int/td)

# ICAO AVIATION TRAINING DIRECTORY

## Aviation Training Providers at Your Finger Tips

The ICAO's Aviation Training Directory (ATD), is a global on-line listing of government approved aviation training providers. It offers unique promotional opportunities for training centers to improve their global visibility and increase their student enrolment numbers.



# TRINIDAD AND TOBAGO HOSTS THE STEM SUMMER CAMP JULY 22 – 26, 2013



## ABOUT RAMESH LUTCHMEDIAL

He is the Chief Executive Officer of the Trinidad and Tobago Civil Aviation Authority and Director General of Civil Aviation for the Republic of Trinidad and Tobago, a position he has held since 2001. He is also the Chairman of the Caribbean Aviation Safety and Security Oversight System, the CARICOM Regional Safety Oversight Organisation. He has pioneered the modernisation of Trinidad and Tobago's Air Navigation infrastructure and the establishment of its Safety Oversight System. He is an aviation professional with a broad based career that spans forty four (44) years.

✈ The Trinidad and Tobago Civil Aviation Authority (TTCAA), as a state organization, and as a member of the International Civil Aviation Organization (ICAO), recognizes its responsibilities to contribute towards economic and sustainable development of the regional and international aviation industry through educational initiatives in aviation and other related technical disciplines.

After a successful exploratory visit to a Science, Technology, Engineering and Mathematics (STEM) Camp in the United States, the Board of TTCAA agreed to host the first STEM Children's Summer Camp in Trinidad and Tobago, initially for one hundred participants during the period July 22-26, 2013.

Following the first advertisement of the STEM Camp in the nation's newspapers, the telephone never stopped ringing! The TTCAA experienced an outpouring of interest by the general public – parents wanting their children to be part of this inventive spin on education and vacation fun, as well as the aviation community





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- ▶ Human Factors in Aircraft Maintenance
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- ▶ Air Traffic Training
- ▶ Aviation Security Training
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1<sup>ST</sup> IN AFRICA - IATA  
(FEBRUARY, 2013)



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The TTCAA experienced an outpouring of interest by the general public – parents wanting their children to be part of this inventive spin on education and vacation fun, as well as the aviation community expressing support and assistance for this programme.



expressing support and assistance for this programme. Eventually, the number of participants was increased to one hundred and sixty by the end of the registration period. Participants ages ranged from six to eighteen.

Throughout the period, the participants took part in a variety of interactive, collaborative activities which utilize aviation and aerospace to explore science, technology, engineering and mathematics. All activities were correlated to international, cross-platform science, math and reading standards. All projects were adapted to the specific participants' ages and grade levels.

The TTCAA and its volunteers were given complete lesson plans, standards and any other relevant information needed to adapt activities to individual classrooms. The programme inspired and promoted team building, peer collaboration, critical problem solving, and hands-on skills application utilizing aviation, aerospace, rockets, simulations, exhibits and guest speakers.

The objective of STEM in Trinidad and Tobago, like the initiatives in the United States, is to foster and develop not just a keen interest, but a passion for science, technology, engineering and math in children from an early age. STEM are considered foundation disciplines that can promote the attractiveness of the aviation and aerospace industry, which, based on current estimates, will require more and more skilled personnel over the next few decades. The TTCAA believes that promoting STEM will have a positive effect on the long term sustainability of national, regional and international aviation.

The STEM Camp was facilitated by Lori Bradner and Captain Judy Rice. Ms. Bradner is the Executive Director of Education at SUN 'n FUN, an educational aviation organization based in Florida. Ms. Bradner has been honored as the Air Force Association's Aerospace Teacher of the Year. Additionally, in 2011, Ms. Bradner was named Kathleen High School's Teacher of the Year. Captain Judy Rice is the Executive Director of Fly to Learn and founder of Think Global Flight, a non-profit organization created to promote STEM education worldwide utilizing the excitement of an around-the-world flight.

Following its resounding success, the TTCAA has committed to make STEM Summer Camp an annual event, aiming to inspire children at every age to enter the dynamic world of aviation and aerospace. It is hoped that even more of the corporate aviation community in Trinidad and Tobago will join together next year to promote, develop and drive STEM in Trinidad and Tobago. ■

The objective of STEM in Trinidad and Tobago, like the initiatives in the United States, is to foster and develop not just a keen interest, but a passion for science, technology, engineering and math in children from an early age.



***“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.

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.



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."



“...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



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# ICAO TRAINING REPORT DIRECTORY LISTINGS

## AFRICA

### ACADÉMIE TUNISO-FRANÇAISE DE FORMATION EN SÛRETÉ DE L'AVIATION CIVILE - AFSAC (TUNISIA)

#### **L'Union fait la force pour un ciel sur et plus ouvert**

**Contact:** Hassen Seddik, Chairmain of the board – **Email:** [contact@afsactunisie.com](mailto:contact@afsactunisie.com)

**Tel:** +216 71 496 754 or +216 27 333 330 or +216 98 333 330 – **Fax:** +216 71 492 658 – **URL:** [www.afsactunisie.com](http://www.afsactunisie.com)

The AFSAC is an approved training establishment by ENAC-AVSEC (Toulouse, France) in civil aviation security and also recognized by the Tunisian authority in Civil Aviation. It offers the following training in compliance with the international standards: Civil aviation security awareness training, security agents training, Training of Trainers in civil aviation security, ...etc. The AFSAC can deliver courses in Arabic, French and English. L'AFSAC est un établissement conventionné avec l'ENAC-AVSEC (Toulouse, France) pour les formations en sûreté de l'aviation civile agréée par l'autorité Tunisienne compétente (Direction Générale de l'Aviation Civile). L'AFSAC offre les formations suivantes : Formation de sensibilisation en sûreté de l'aviation civile, Formation agent de sûreté, Formation des formateurs en sûreté de l'aviation civile, ...etc. Les formations de l'AFSAC peuvent être en Arabe, Français et Anglais.

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

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

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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.

### AVIATION ACADEMY FOR SOUTHERN AFRICA – AAFSA (SOUTH AFRICA)

#### **AAFSA – Where Quality & Cost Effective Training Comes First**

**Contact:** Andries Viljoen – **Email:** [driesv@aafsa.co.za](mailto:driesv@aafsa.co.za) – **Tel:** +27 11 927 4114 – **Fax:** +27 11 927 2917 – **URL:** [www.aafsa.co.za](http://www.aafsa.co.za)

AAFSA is a South African CAA Approved & Accredited Aviation Training Organization (ATO). AAFSA is also Aerospace Transport Education Training Authority (TETA), Safety & Security Sector Education and Training Authority (SASSETA) Approved & Accredited and is also an ICAO recognized Aviation Trainer Provider. AAFSA provides all sectors associated with the commercial aviation industry with quality, cost effective and customized training solutions keeping employers one step ahead commercially and in terms of their safety compliance.

### EAST AFRICAN SCHOOL OF AVIATION - EASA (KENYA)

#### **To Be The Preferred Aviation Centre of Excellence in Africa, Providing World Class Training**

**Contact:** Justina Nyaga, AG Director – **Email:** [info@easa.ac.ke](mailto:info@easa.ac.ke) – **Tel:** +254 020 6823607 – **Fax:** +254 020 6823699 – **URL:** [www.easa.ac.ke](http://www.easa.ac.ke)

The East African School of Aviation (EASA) is a premier aviation training institution in Africa established in 1954. EASA is a directorate and training institution of the Kenya Civil Aviation Authority (KCAA). The school attracts trainees from East, West, Central and Southern Africa. EASA is an ISO 9001-2008 certified institution. It has the following accreditation both local and international: An approved aviation training organization (ATO) mandated by the regulator (KCAA) to conduct aviation training; An ICAO TRAINAIR PLUS full member; An aviation security training centre (AVSEC); An IATA accredited training centre. EASA has excellent facilities such as state of the art training simulators and an aircraft for training purposes, modern conference facilities, a library, laboratories, beautiful well-manicured grounds, a cafeteria & a student hostel; a swimming pool and ample parking space with 24 hour security.

## NIGERIAN COLLEGE OF AVIATION TECHNOLOGY (NCAT), ZARIA (NIGERIA)

### Training for Excellence

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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 - AVIATION TECHNOLOGY SERVICES (EGYPT)

### Committed to Aviation Excellence

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United ATS plays an integral role in aviation safety by providing highly specific professional trainings that equip aviation industry personnel with new skills either by learning from highly experienced 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 a unique professional training package solutions tailored for the practical needs of stakeholders with a particular emphasis on technical and legal issues to meet ICAO mandatory requirements in ATM, AIM, PANSOPS, ATC, aeronautical survey, eTOD and aerodrome certification.

# ASIA AND PACIFIC

## AIR NEW ZEALAND AVIATION INSTITUTE (NEW ZEALAND)

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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 10000 staff at Air New Zealand including 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, call centre to captain and ATR to Boeing 787.

## AIRWAYS (NEW ZEALAND)

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**Contact:** Paul Linton, Head of Sales and Marketing – **Email:** international@airways.co.nz

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Airways New Zealand manages air traffic within New Zealand's 30 million km<sup>2</sup> of airspace, and is also an experienced training provider. We specialize in recruiting and training air traffic controllers and technical maintenance engineers. We offer highly skilled and experienced instructors, cutting-edge training technologies including our own ATC simulators, computer based training, and internationally recognized best practice training programs.

## ARDMORE FLYING SCHOOL (NEW ZEALAND)

**Contact:** Ms. Liz Hardy – **Email:** Liz.hardy@ardmore.co.nz – **Tel:** +1 09 298 5055 – **Fax:** +1 09 298 3007 – **URL:** www.ardmore.co.nz

Ardmore Flying School has been training pilots since 1961 and is recognized internationally as a quality facility, providing consistently high standards in all aspects of flight training. Ardmore Flying School is NZQA, New Zealand Qualification Authority approved for a diploma in aviation and holds the New Zealand Civil Aviation Authority (NZCAA) part 141 approval for flight training.

# CARRIBEANS

## JAMAICA CIVIL AVIATION AUTHORITY TRAINING INSTITUTE - CAATI (JAMAICA)

**Together we work, together we achieve**

**Contact:** Ms. Coral McLaren – **Email:** coral.mclaren@jcaa.gov.jm

**Tel:** 1 876 819 8231 – **Fax:** 1 876 920 3144 – **URL:** www.jcaa.gov.jm/ANS/CAATI.html

The Jamaica Civil Aviation Authority Training Institute (CAATI) is an accredited and approved Aviation training center providing high level of training in various aviation disciplines. The school embodies the philosophy that learning should challenge the intellect and abilities of the students and stimulate their best performance. Courses are presented in a learner friendly environment with the emphasis focus on providing training at the International standard. We offer air traffic training in the form of air traffic control assistant/flight data processor, aerodrome, approach, area control, procedural or radar and aviation safety courses. The program is constantly expanding to provide innovative solution to aviation training needs.

# 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

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The founding members of AAI comprises of university professors, aviation law experts, test pilots, court surveyors, examiners and representatives of various local authorities. Our academy aims to train on 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/IEC 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.

## AIR SERVICE TRAINING LTD (UNITED KINGDOM)

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**Contact:** Robert Sutherland, Senior Business Manager – **Email:** Robert.sutherland@perth.uhi.ac.uk

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Air Service Training Ltd has 4 main product areas that lie at the core of its business; approved engineering courses, approved flight training courses, bespoke engineering courses and consultancy services. Air service training, based in Perth Scotland is approved by the UK Civil Aviation Authority to offer training and examinations to meet the requirement of the IR Part 66 aircraft maintenance license, in all currently available A&B categories. In addition to individual modules, we offer integrated programs of 23 weeks (B1) or 26 weeks (B2) at a greatly reduced price. AST is also approved under Part-FCL/Part-ORA regulations to deliver ground school training to those seeking the air transport pilot's license. AST is registered through Perth College UHI for ELC's.

## AIRTRACE – INTERNATIONAL AIRPORT ENVIRONMENT TRAINING CENTRE (SWITZERLAND)

**Swiss Quality Training**

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

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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.

# Effective Global Leadership Through Balanced Priorities

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**Tel:** +44 1202 411887 – **URL:** www.aviation-english-division.com

Anglo-Continental is one of the world's best known English language teaching organizations. Its courses are accredited by the British Council and it is a member of EnglishUK and BusinessUK. It is also an approved teaching training center for the University of Cambridge certificate in English language teaching to adults. It has been a world leader in delivering English training programs to aviation organizations worldwide since 1971. Our aviation English courses and our CAA approved test of English for aviation personnel are delivered at Anglo-Continental in England and abroad. These products are specifically designed for the aviation industry to meet ICAO's language proficiency requirements.

## CAA INTERNATIONAL (UNITED KINGDOM)

### Aviation Training From The Practicing Professionals

**Contact:** Training Team – **Email:** training@caainternational.com

**Tel:** +44 (0) 1293 768700 – **URL:** www.caainternational.com

CAA International (CAAi), a wholly owned subsidiary of the UK Civil Aviation Authority (UK CAA) and is a leading, globally recognized aviation consultancy and training company. Delivering and promoting best practice in the practical application of aviation regulation, safety oversight, compliance monitoring and education. CAAi is helping to create a flying world fit for the 21<sup>st</sup> Century. CAAi offers a comprehensive portfolio of public access courses and tailored training programmes, covering all aspects of aviation safety regulation. CAAi's strength lies in its ability to provide training solutions which are quality assured to ISO9001 standards by active regulators as subject matter experts, involved in directly influencing International policy and rulemaking at a strategic level. CAAi training services are based on ICAO standards and recommended practices (as a minimum) and provide the highest levels of practical training that delivers measurable results for individuals and organizations.

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Caspian Radio Services LLP (CRS) was registered in 2004 with the aim of training and employing local personnel for the offshore and onshore oil industry. By committing ourselves to having a central training and employment centre for all aviation related activities, we can provide a standard acceptable to all companies. Our services include aeronautical radio and navigation equipment maintenance, repair and certification. We also supply and install aeronautical equipment for offshore and onshore helidecks. We are licensed by the Kazakh Government ministry of education and civil aviation, committee of the ministry of transport and communication as a recognized teaching facility for radio operators, helicopter landing officers, helideck assistants and dangerous goods by air courses. CRS is accredited by IATA for dangerous goods by air training.

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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

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**Tel:** +1 358 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 programs 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

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**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.

## MACMILLAN EDUCATION (UNITED KINGDOM)

### Your Partner in Education

**Contact:** Fauzia Eastwood, Marketing Executive (Adult, Professional and Methodology) – **Email:** help@macmillan.com

**Tel:** +44 207 833 4000 – **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 – **Fax:** +44 1752 671537 – **URL:** www.aviation-english.com

Located in the historic, seaside city of Plymouth (S.W. England), Mayflower College is a leader in Aviation English “ICAO Level 4” training and testing. It has been providing courses to the aviation community since 1992 and every year welcomes 1000+ learners from 40+ countries. Mayflower College is the developer of the Test of English for Aviation (T.E.A.) and the co-developer of the online training / testing program ‘Climb Level 4’.

## MET OFFICE COLLEGE (UNITED KINGDOM)

### World-renowned for excellence in meteorology and climate training, combining scientific excellence

**Contact:** Ruth Hammond, Marketing Manager – **Email:** moc.enquiries@metoffice.gov.uk

**Tel:** +440 1392 885016 – **Fax:** +44 0 1382 885681 – **URL:** www.metoffice.gov.uk/training

As leaders in aviation meteorology, the Met Office College has developed a wide range of training courses for the aviation community which conforms to the latest world meteorological organization training and education guidelines. We teach international best-practice techniques in meteorological forecasting and observing, always including the most recent developments in aeronautical meteorology, as well as courses that enable operational meteorological staff to meet international civil aviation organization requirements. We also provide training that can help you better understand and interpret meteorological and climatological information and the potential impacts on your business. Whichever type of course you choose, our team of highly skilled staff can deliver it either at a location most convenient to you or at the excellent training facilities within Met Office-headquarters.

## 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 EAL TS, 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, ATC Unit Management, document production, 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. This experience is now channelled into the delivery of airport operations training courses covering a wide range of topics and content tailored to the client's operational demands.

## SWAN AVIATION LLP (KAZAKHSTAN)

### Your Aviation Partner and Training Solution in Kazakhstan

**Contact:** Gurcan Malli, General Director – **Email:** gmalli@swanaviation.kz  
**Tel:** +7 727 311 04 13 – **Fax:** +7 727 31104 98 – **URL:** www.swanaviation.kz

Swan Aviation LLP is the Kazakhstan's first training center providing wide range, high quality trainings with internationally accredited instructors in compliance with ICAO and EASA regulations for authority staff, aviation managers and aviation specialists from different fields of aviation. Company is an IATA authorized training center accredited in the field of aviation and cargo programs (dangerous goods regulations). Being a partner training organization to Joint Aviation Authorities Training Organization (JAATO/ECAC) under training service agreement company aims to fulfill all regulatory training requirements for international compliance. Having authorization for 'STANFORD IATA aviation management training program the company aims to create a well trained and value added human resources for Kazakhstan in all levels of aviation management. Quality, safety, security and environmental protection are company's main focus.

## 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 01 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 4430 1646 or +00 974 4462 5138 – **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 COMMERCIAL, CADET, BUSINESS AND HELICOPTER)

#### Partner of Choice

**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)

#### A Passion For Aviation

**Contact:** Nicole Mercier, Director, International Development Affairs – **Email:** Nicole.mercier@cegepmontpetit.ca

**Tel:** +1 450 679 2631 – **Fax:** +1 450 679-4170 – **URL:** www.ena.college-em.qc.ca

ÉNA, an affiliate of Edouard-Montpetit College, is the largest college-level aeronautical institute in North America, for both its infrastructure and its student capacity. It is the only school in Quebec that offers training in the following programs: Aircraft manufacturing technology, aircraft maintenance technology and avionics technology. ÉNA is the industry's first choice for its workforce and for the continuing education of its technicians. The school accepts over 1,300 full-time students each year and over 6,000 technicians in continuing education. It is one of the few schools in Canada authorized by Canada's Department of National Defense 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](http://www.iata.org/training)

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**Email:** [training.sin@iata.org](mailto:training.sin@iata.org)

**Tel:** +65 6499 2293

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

## PAN AM INTERNATIONAL FLIGHT ACADEMY (UNITED STATES)

### We train airline pilots.

**Contact:** Gregory Darrow – **Email:** [GDarrow@panamacademy.com](mailto:GDarrow@panamacademy.com) – **Tel:** +1 303 394 2118 or U.S. 877 394 2118 – **URL:** [www.PanAmAcademy.com](http://www.PanAmAcademy.com)

Pan Am International Flight Academy is one of the largest and most experienced aviation pilot training organizations and has over 80 full-flight simulators in locations throughout the U.S., Europe, and Asia. We offer a complete menu of training programs for airlines, governments and individuals including Pilot Training, Type Ratings, Recurrent, Flight Attendant, Line Training, ATC, Dispatcher, and Maintenance Training. We own and operate the world's most diverse simulator fleet including the B787, B777, B767, B757, B747-400, B747, B737 All Models, B727, B707, A-300, A-320, A-330, MD-80, MD-11, DC-9, DC-10, EMB-175, EMB-190, CRJ-200, CRJ-700, CRJ-900, SAAB 340, Q-400, DHC-8, and the Cessna Caravan. In the private sector, Pan Am's unequalled ProPilot Training program provides seamless aviation training from zero time to a commercial pilot license—with early introductions into airline procedure and full-motion simulation as part of initial training.

## PRATT & WHITNEY (UNITED STATES)

### It's in our Power.™

**Contact:** Robert Maciorowski, Commercial Training Operations Manager – **Email:** [Robert.Maciorowski@pw.utc.com](mailto:Robert.Maciorowski@pw.utc.com)

**Tel:** +1 860 565 5458 – **URL:** [www.pwcustomertraining.com](http://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 programs 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.

## SPRANZA INC (UNITED STATES & AFRICA)

### Future Solutions Today

**Contact:** Francis Spranza, Director – **Email:** [spranzallc@gmail.com](mailto:spranzallc@gmail.com), [director@spranza.com](mailto:director@spranza.com), [info@glosatsecurity.com](mailto:info@glosatsecurity.com)

**Tel:** +1 772 237 0166 or +234 70331 53573 – **URL:** [www.spranza.com](http://www.spranza.com)

Formed in 1981, Spranza LLC provides quality training, document compliance and audit preparation assistance as well as innovative technologies to airports, airlines and civil aviation authorities worldwide. With instructional staff drawn from the fields of military science, civil aviation, psychology, aviation operations, academia and computer science, Spranza in class and distance learning programs and provides basic and advanced instruction in the fields of aviation security, emergency response, safety management and airport operations worldwide. Spranza instructional and consulting services are available both on-site at client locations as well as in-residence through our partner GLOSAT Security Services (Nigeria) LTD at their state of the art training center in Abuja, Nigeria.

## THE WASHINGTON CONSULTING GROUP (UNITED STATES)

### WCG - Innovative technical services and solutions for complicated environments

**Contact:** Dr. Ned Reese, Vice President Technical Training – **Email:** [Ned.reese@washcg.com](mailto:Ned.reese@washcg.com)

**Tel:** +1 301 656 2330 – **URL:** [www.washcg.com](http://www.washcg.com)

The Washington Consulting Group, Inc. is a professional services firm offering a wide variety of technical consulting services to air traffic service providers in both domestic and international venues. WCG has established a solid record of providing innovative, cost-effective solutions within stringent time and budget constraints. Our company has established itself as a leader in the international aviation community in the areas of ATC training, operations and air traffic management. We provide consulting services, operational support and training for virtually every element that is critical to the operation of an air traffic system for both domestic and international clients. WCG is an ISO 9001:2008 certified company and a member of the ICAO Trainair PLUS Program.

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300

IATA Training & Development Institute

KNOWLEDGE • EXPERIENCE • NETWORKING • SKILLS • RESULTS

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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.

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