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Language Proficiency

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An important new standard and a Council that's held fast to its March 2008 compliance deadline... But will the world be ready?

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CANSO's 'Global Vision'; CANSO Secretary General Message.



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Editorial

ICAO External Relations
and Public Information Office
Tel: +01 (514) 954-8220
E-mail: journal@icao.int
Web Site: www.icao.int

Anthony Philbin Communications
Editor: Anthony Philbin
Tel: +01 (514) 886-7746
E-mail: info@philbin.ca
Web Site: www.philbin.ca

Production and Design

Bang Marketing
Stéphanie Kennan
Tel: +01 (514) 849-2264
E-mail: info@bang-marketing.com
Web Site: www.bang-marketing.com

ICAO Photographs: Gerry Ercolani

Advertising

FCM Communications Inc.
Yves Allard
Tel: +01 (450) 677-3535
Fax: +01 (450) 677-4445
E-mail: fcmcommunications@videotron.ca

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Setting the Air Navigation Bureau on a 21st Century Course

The aviation community is enjoying the safest period in the history of transportation. On the one hand we can, and should, congratulate ourselves. On the other, however, much remains to be done. It is normal to want to take a breather when things seem to be headed in the right direction but we simply cannot allow ourselves this luxury. Instead, we must face the fact that over the past few years the traditional approach to aviation safety has yielded diminishing returns in terms of time and resources invested. Airport and airspace congestion in many parts of the world are already stretching air navigation and ground facilities to the limit. With air traffic forecast to increase at an annual average global rate of 5.8 per cent over the next three years, with double-digit figures expected in high density areas, the pressure will only increase exponentially. Such growth will also have predictable negative consequences for the environment in spite of the tremendous technological and operational achievements of the last four decades to curb greenhouse gas producing emissions from jet aircraft.

This is today's reality. We need to develop *and quickly implement* new strategies to deal with these critical issues or risk facing even bigger challenges in the near future. At the same time, we must begin to break through the political and institutional issues that up to now have slowed progress in many areas.

Obviously, ICAO's overall resources, including those relating to the delivery of technical knowledge and expertise develo-



ped by the Air Navigation Bureau and the gathering of intelligence on the state of aviation worldwide, must work in tandem and feed each other. To that end, the ANB is being progressively reorganized under a new results-based management framework so that ICAO continues to become more performance driven and responsive to the needs of States and the industry.

The last two issues of the *Journal* began outlining some of these fundamental changes. Throughout the year, selected feature articles will complete the picture.

In the area of Safety, we will redouble our efforts in Safety Management. Safety Management Systems will give us the intelligence we need to counter problems before they become headlines. At the same time, ICAO is taking a very proactive stance on the results of our audit programmes,

both the Universal Safety Oversight Audit Programme and the Universal Security Audit Programme. Within the Secretariat we have developed an Audit Results Review Board which has looked at the results of 54 States which have not participated fully in the safety and/or security oversight processes, or which face challenges in their efforts to establish sound safety and security oversight systems. Our involvement does not stop there. ICAO is working with States and donors to develop programmes tailored to support those States most in need through the Technical Cooperation Bureau programmes and COSCAP activities. For the first time in ICAO's history, where imminent safety issues have been identified, States have been asked to deregister aircraft and revoke pilot licences until a robust oversight capability can be demonstrated.

Efficiency is at the heart of the Air Traffic Management (ATM) Operational Concept and Global Air Navigation Plan revised in November 2006. The ANB has squarely aligned itself organizationally along those lines and key programmes, such as reduced vertical separation minima (RVSM) and required navigation performance (RNP), are well into the implementation phase. We are also planning the transition to an electronic Air Navigation Plan (eANP) environment – a milestone transition from a paper-based ANP format to an electronic format

with supporting tools for the planning and management of Air Navigation Plans. In 2008, ANB will sponsor two key symposia that will help take us to the future of aviation—the first, in June, focusing on aeronautical information management and global data sharing, and the second, in September, on the future aviation system.

Concerning the environment, we are further exploring technical ATM options to address the emissions problem. This will engage flight crews, air traffic controllers and other technical personnel that make tactical, day-to-day operational decisions impacting the environment.

In short, the Air Navigation Bureau, like all other components of ICAO, is now strongly focused on results, results that mean something to you, our customers. We are re-aligning and re-tooling to meet the challenges of the 21st century. We are becoming better equipped to play our role in the global quest for continued improvements in safety, reduction in green house gas emissions, and streamlining the technical and administrative complexity of the global air transport system. ■

Nancy Graham, Director,
Air Navigation Bureau

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LANGUAGE PROFICIENCY: THE EXPERTS' PERSPECTIVE

THE LOOMING ICAO LEVEL 4 LANGUAGE PROFICIENCY DEADLINE POSES SERIOUS CONCERNS FOR STATES, AIRLINES, PILOTS AND ATC SPECIALISTS, AS WELL AS THE EDUCATORS WHOSE RESPONSIBILITY IT IS TO ASSIST ALL THESE STAKEHOLDERS WITH ACHIEVING COMPLIANCE.

AT THE RECENTLY-CONCLUDED 36TH ASSEMBLY, THE ICAO COUNCIL VOTED TO MAINTAIN THE MARCH 2008 LEVEL 4 DEADLINE BUT ALSO STIPULATED A GRACE PERIOD FOR CERTAIN STATES SO LONG AS A PRECISE SERIES OF CONDITIONS IS CLEARLY MET FOR MARCH 2008 (SEE LIST, PAGE 28).

THE FOLLOWING TEXTS ARE EDITED AND ABRIDGED FORMS OF KEY PRESENTATIONS GIVEN AT THE *SECOND ICAO AVIATION LANGUAGE SYMPOSIUM (IALS/2)*, 7–9 MAY 2007. FOR COMPLETE AND UNEDITED VERSIONS OF THESE TEXTS, AS WELL AS FOR ADDITIONAL PRESENTATIONS GIVEN AT THIS EVENT, PLEASE REFER TO THE ICAO WEBSITE AT: [HTTP://WWW.ICAO.INT/ICAO/EN/ANB/MEETINGS/IALS2/DOCUMENTATION.HTML](http://www.icao.int/icao/en/anb/meetings/ials2/documentation.html).

Aviation English Training for Brazilian Pilots: A Case Study

Ms. Adriana Lage Toma, Advanced Training Organization (ATO), Sao Paulo, Brazil

The amount of hours needed for language training far surpasses the number of hours needed for technical training, which makes it difficult for airlines to adopt any language training in a short-term period. Any successful language training needs at least a weekly commitment from the learner.

For more than a year, an informal survey of airline pilots' feelings and expectations about their language learning was done for benchmarking purposes. Pilots answered questions such as what kind of language training they were having, how long they have had it, how they were feeling about their improvements and what kind of language training they were seeking.

The most important information gathered was as follows: most of the pilots have already taken English classes, either in Brazil or abroad, while a minority has learned English on their own through popular culture (books, magazines, television, movies) or living abroad. Concerning further training, almost all of the pilots queried were interested in improving or maintaining their proficiency, but they also often mentioned that they were demotivated by English classroom materials that were overly-generalized, noting that these had become boring to them by now and that most educators had no understanding or interest in their aviation-specific needs. We also detected complaints regarding pilots' inability to attend regular classes on a 2-day, weekly basis, and again some noted that they couldn't build constructive bonds with the teacher because he or she had no aviation knowledge and were not interested in learning about it.

Tailoring a Specific Aviation English Program

After gathering and studying this information, a thorough Aviation English Program was tailored to attend to pilots' needs, considering the nuances of Brazilian pilots' actual routine and expectations, and developed according to the recommendations described in the Manual on the Implementation of ICAO Language Proficiency Requirements (Doc 9835).

On average, Brazilian pilots work on a 3- to 6-day schedule, usually out of station, followed by 1- to 3-days-off for rest. Also, they often start their duties late in the afternoon or finish a shift before lunch time. The course curriculum was therefore distributed in one 3-hour class per week, repeated from Monday through Saturday in the mornings and afternoons, and allowing students to choose which day and period to come to class according to their personal availability. Students were split-up into groups of up to 10 pilots, and were placed within one of three different modules according to their current proficiency level as indicated by a test taken at the language center.

Each 3-hour class was divided into two periods of 1h30, with a 15-minute break to allow students some rest to re-establish their concentration. Tasks were prepared to last up to 20 minutes each. Classroom activities were focused on speaking and listening skills, aiming to improve all six elements described in the ICAO rating scale, while reading and writing activities were used as aids to support listening



and speaking, all of which complied with Doc 9835, chapter 8.3.1. One 2-hour homework assignment was also given every week to reinforce lesson content prior to the delivery of new classroom material.

Group Learning Benefits

The vast majority of pilots who answered preliminary questionnaires stated that they had only had prior English classes on a one-to-one, teacher/student basis. They stated that new English courses would be more desirable to them if they could have the opportunity to share their experiences with a group of people in a common situation. In other words, they felt that a group dynamic would “make their language learning classroom a more interesting, lively and engaging place to be” (Doc 9835, 4.2.4.). It was found that group classes promoted a more comfortable class environment and stimulated more spontaneous exchange of information between students. Classes were thus “...more student-centered, (where) interactive classroom approaches (are) designed to increase learners’ communicative competence in the language”. (Doc 9835, subchapter 4.2.4.).

At the end of the first 125-hour module, students noted that group-learning better prepared them for English communication outside the classroom. This was accomplished primarily through role-playing, discussions and simulations, as well as by increasing “opportunities for students to hypothesize and support their opinions” (Doc 9835, 8.1.5.). Pair work and small group activities were organized to help students develop skills to “improve comprehension under adverse conditions (such as excessive background noise)”, and “practice speaking while collaterally tasked” (Doc 9835, 8.1.5.).

The Need to Enhance Group Activities with Personalized Learning Tasks

Group classes are only effective if teachers also take into consideration their students’ individual needs. Tasks covering different individual learning styles and strategies need to be

prepared in order to enable all students to develop appropriate skill sets. To ensure that this was achieved, a group of psychologists who specialize in aviation developed tests to identify these individualized student learning approaches. International and established tests were used, as well as one especially developed for students with aviation backgrounds. Student characteristics compared were: short-term vs. long-term memory; visual, auditory and kinesthetic sensorial style; focused attention vs. divided attention; and concentration capacity. As mentioned in Doc 9835, (8.1.3.), “providing multiple learning options and environments will also play into preferred learner styles”.

The psychologists provided students with feedback, suggesting techniques concerning how to improve their less-used learning senses by exploring their home environment. Students thus became very motivated and found their self-confidence was boosted during the course. Teachers became aware of students’ needs and prepared activities according to the results obtained, some of which are described below.

Auditory, Visual and Kinesthetic Learners

They are three basic sensory modalities used for learning: visual, auditory and kinesthetic. Ideally, all three senses should be balanced in order to optimize the learning process, but tests often showed that one of the three senses was usually more developed than the other two depending on the individual.

Visual learners judge by what they see, retaining information more effectively when it is presented in charts, graphs and symbols. Visual learners absorb information quickly and tend to have higher classroom participation. Auditory learners use words and sounds for learning, and tend to require more time to assimilate information. They are more passive in class because of this longer assimilation period, and tend to learn more effectively from lectures, audio files and reading aloud. These students were advised to study by speaking in front of the mirror, repeating the information several times and speaking aloud.

Kinesthetic learners use experience and practice to learn, based on either simulated or real situations. These students learn more effectively when information is presented in the context of their actual personal experiences.

Short-term vs. Long-term Memory

Short-term memory is used to recognize and act upon instant information which is then forgotten once the specific associated task is completed. Long-term memory is where permanent memories and facts are stored. Information becomes

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part of long-term memory by repeating and practicing a piece of information, (rehearsal), or by associating lesson content with emotional or survival cues, transforming it into something outstanding or unusual (meaning).

Test results showed that many students have weak long-term memory. Therefore it is vital that teachers always revise important lessons after some classes to reinforce and help students keep the information. Five to ten minutes at the beginning of each class are enough to review a subject, thus offering more opportunities for students to store the information in the long-term memory.

Concentration

Concentration refers to how long learners can direct their thinking to one or more stimuli. Tests have shown that students can generally concentrate on a task for up to twenty minutes. Tests also have shown that students are more focused when they are committed to and enthusiastic about the task. For these reasons activities were planned to last no longer than twenty minutes, warm up activities were prepared to develop student interest, goals were set to help students focus, activities were varied throughout the class, and a time limit was set for each activity. Students were also advised to perform extra-class activities in order to develop concentration skills and strategies.

Classroom Techniques

Several well-known classroom techniques are being used by our teachers to develop and improve students' skills. Although the Communicative Approach is the methodology adopted at the learning center (ICAO doc 9835 (4.2.4.) notes: "classroom activities focus on providing learners with opportunities to interact with the language in order to engage all of the elements that constitute language use... (and) grammar teaching in communicative classrooms is done in a meaningful context"), a combination of other methodologies and techniques are used at certain times to increase students' learning opportunities. Some of these are described below.

Developing Structure

Grammatical structure can be compared to the bones of the body. It gives support to effective communication, enabling people to organize language. According to the ICAO rating scale, "relevant grammatical structures and sentence patterns are determined by language functions appropriate to the task".

Students were therefore exposed to communicative activities where "grammar teaching... is done in a meaningful context" (doc 9835, 4.2.4.). (For further information on the steps and approaches suggested by ATO to teach basic grammar, please refer to the full version of this presentation at <http://www.icao.int/icao/en/anb/meetings/jals2/Docs/1.Lage.pdf>).

Developing Fluency and Interactions

Fluency can be defined as how well one can convey messages. People learn how to speak through practice, therefore at least two people are needed to develop fluency. The most common techniques include role-playing, simulations and discussions, offering students the opportunity, as described in Doc 9835, to "manage the speaker/listener relationship" and "initiate and maintain exchanges". For fluency learning teachers prepare tasks in which several language patterns and functions are presented, allowing students to choose among an array of patterns to use, just as in real life. Teachers should not focus on accuracy, but on language comfort and basic fluency. Any student errors in accuracy should be noted down by the teacher to be discussed with the whole class after the completion of the fluency activity (For further information on specific fluency-related teaching techniques, please refer to the full version of this presentation at <http://www.icao.int/icao/en/anb/meetings/jals2/Docs/1.Lage.pdf>).

Developing Comprehension

According to ICAO, the pilot/controller shall "be able to comprehend a range of speech varieties (dialect/accents) or registers", and comprehension should be "mostly accurate ... when accent or variety used is sufficiently intelligible...". One of the main concerns of students

is the ability to understand accents and regional variations in English spoken as a second language. Brazilian pilots, in particular, are not accustomed to listening to Arabic English, Russian English or Chinese English, for example. As Brazil is surrounded by Spanish speaking countries, Spanish English is easier to understand, as accommodation has already taken place.

Comprehension skills can be developed by exposing students to a team of teachers whose English backgrounds vary. Moreover, group classrooms allow students to increase opportunities "for the unpredictability of real communication, linguistic or situational complications" and to be "confronted with a linguistic or situational complication or an unexpected turn of events". Finally, teachers can build listening activities from real-life aviation articles recording other English teachers' voices, international friends and text-to-speech tools available on the web.

"At the end of the first 125-hour module, students noted that group-learning better prepared them for English communication outside the classroom. This was accomplished primarily through role-playing, discussions and simulations, as well as by increasing 'opportunities for students to hypothesize and support their opinions' (Doc 9835, 8.1.5.)."

Program Outcomes

After completing 125 hours of study, students took an extensive test, both written and oral. Even though ICAO requirements focus on listening and comprehension skills, in our language center all four skills were assessed. Examiners analyzed all six elements of ICAO holistic descriptors and results were supported by the ICAO rating scale.

Students who entered the courses as lower Level-3 proficient achieved results as follows:

- 23% achieved high scores between 90-100 (Level 4);
- 58% achieved average scores between 75- 89 (lower Level 4);
- 8% achieved minimum scores between 60- 74 (higher Level-3);
- 3% were unable to achieve minimum requirements to move on to next level;
- 6% were absent in more than 25% of classes and were advised to revise the material;
- 2% quit for external reasons.

The results show how effective the program is: 81% of the students who were lower Level-3 have progressed to Level 4. Many students reported that they were complimented on their English performance by their flight instructors enroute. 6% of the students who were unable to attend more than 75% of classes stated that tight flight schedule combined to their hometown being in another city were the relevant issues for not attending the classes. 8% of the students had difficulties in mastering some of the linguistic domains, however their skills nonetheless improved significantly. 3% were unable to master all the linguistic domains and were advised to take extra classes to review and reinforce weak points. ■

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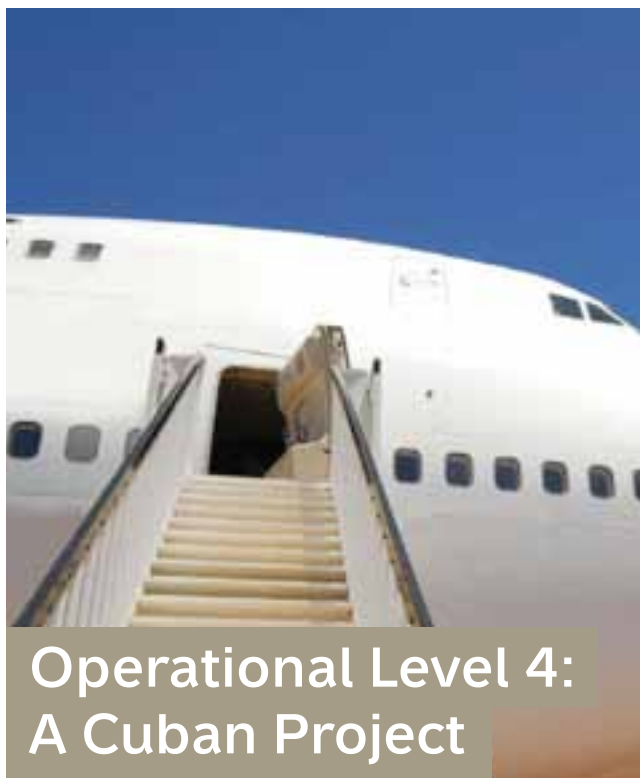
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Operational Level 4: A Cuban Project

**Mrs. Marina Brizuela, English Project
of Operational Level 4, Cuba**

**Mrs. Adita Chiappy, Association
of Teachers of English, Cuba**

The training and testing of personnel to meet the ICAO Operational Level 4 has posed a particularly complex and difficult challenge for the Institute of Civil Aviation of Cuba (IACC). The main difficulties of the task arise from a combination of factors which include: the limited time available; the very large size of the target population, and; the fact that we are dealing with a sector-specific focus on English language learning for the aviation industry (English for Specific Purposes, or *ESP*).

After the definition of a safety policy by ICAO Assembly Resolution A32-16, the development of the ICAO Language Proficiency Requirements, and the September 2004 Language Symposium in Montreal, the urgency of the task was clear, and a national monitoring group (following the model provided by ICAO PRICESG) was created to determine the steps to be followed within our institute. Among the first steps taken were:

- Elaboration of a national strategy for Cuban Civil Aviation.
- A complete census of the target population for Operational Level 4.
- Diagnosis of the current level of English of the target population.

- Analysis of the different educational materials available for the teaching of general and aviation-specific English.
- Recruitment of teachers to ensure staff competencies in general English and aviation-specific English.

The National Language Group

After these initial steps a national working team was created (The National Language group), with the objective of designing and putting into practice a project conducive to the effective implementation of the training and testing of personnel to meet the ICAO Operational Level 4.

The overall task of the group and the project has been to create a system of language teaching which could function as a learning community to unite isolated teachers and groups of learners and classrooms scattered across Cuba. The group would also be capable of providing coherent national results in terms of quality of learning and standardized levels of proficiency. The Group includes ESP specialists from the National Association of Linguists, teachers of English, and retired aviation personnel (pilots, ATC controllers) who meet regularly, report systematically to the Direction of Training of IACC, and monitor all the activities of the project.

Activities Developed

- A)** Elaboration of a series of documents to be used as guidelines for the implementation of the project:
- Strategy for the teaching of English in the Institute of Civil Aviation in Cuba.
 - Plan for the Preparation of teachers of English.
 - Language Teaching Program 1.
 - Language Teaching Program 2.
 - Special Teaching Program.
 - A system of testing instruments based on the specifications for Operational Level 4 defined by ICAO.
- B)** Preparation of teachers:
- Recruiting and hiring of staff at the Centre for Aeronautic Training, and Airlines belonging to the IACC.
 - Program of class observation of all teachers in the project.
 - Series of methodology seminars for teachers:
 1. To unify criteria with relation to some aspects of the modern teaching of foreign languages.
 2. To raise the teachers' awareness of the basic conventions of ESP.
 3. To discuss, analyze, and recommend how to improve the problems detected in the classes observed.
 4. To become familiar with aspects and characteristics of Aviation English.
 5. To train the personnel directly involved with language proficiency testing such as language raters, operational raters, and interlocutors on the implementation of tests for the ICAO Operational Level 4.



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C) Other activities:

- Identification and acquisition of the educational materials, for teachers and students, necessary for the development of the project.
- Regular reports to all participating companies on the learning process, with recommendations on how to improve or resolve the problems detected.
- Application of the tests for ICAO Operational Level 4 to those pilots and air traffic controllers who are supposed to have reached that level already.



The ESP Focus

Among the many aspects involved in an ESP strategy for language teaching, some of which have been traditionally neglected, we would like to mention four. These have been selected because of the decisive role they play in the final learning outcomes expect of high stakes or “high surrender value courses” (Corder, 1975), as typifies ESP courses.

Process of Immersion

The first element, the process of immersion goes far beyond the mere inclusion of technical words or the specialized language of the field, as it is sometimes understood. It means, instead, penetration of the environment where the teaching and learning process is going to take place, and it has to do with a variety of aspects, ranging from characteristics of the learners (age, education, cultural level, etc.) to problems of organization of classes (days, hours, duration, etc.), and/or grouping of students by jobs, work shifts, or levels. The main difference here from traditional general English courses is that they do not take place in an educational setting.

“ The overall task of the group and the project has been to create a system of language teaching which could function as a learning community to unite isolated teachers and groups of learners and class-rooms scattered across Cuba.”

At the same time, the situation in which the foreign language is going to be used may be completely unknown to the ESP teacher or specialist. If he/she wants to incorporate those situations into classroom practices, language behavior and learning materials, he/she has to understand from an ESP perspective the purposes, the contents and the rationale for meaningful interactions and situations (i.e teachers have to somehow experience them, at least through observation, but much better through direct participation, and become familiar with their discourse(s) before approaching curriculum design or teaching).

Organization of the Teaching/Learning Process

Regular English Language Learning courses most often take place in an educational setting, while ESP courses take place mostly in a work setting, where the teaching/learning process is inserted as an extraneous and sometimes conflicting professional duty. The day-to-day requirements of the profession, ironically, may both demand yet hinder the development and implementation of the necessary ESP Program.

In the specific case of aviation, the work of pilots and air traffic controllers makes it virtually impossible to establish fixed class schedules. According to experience gained so far, there cannot be a national schedule for language classes, and different companies have to look for different solutions. These may include:

- Classes every other week according to the flight duties of the crew. These classes, however, can be intensive (as much as 4-6 hours, five days a week). As a complement, homework and individual tasks are assigned.
- Intensive periods of classes, for two or more consecutive weeks, when crews are not flying for more than one consecutive week.
- Classes twice a week, which are repeated on consecutive days, so as to provide opportunities for those who could not attend one day to attend on the following day.

This last variant does not permit effective planning or relationship building among students, which is becoming more and more important in theory of language learning and teaching. As a whole, there must be a solution for each particular situation, so that the systematic nature of the learning process is preserved.

Teacher’s Attitude

The creation of a learning community can only be accomplished if we consider the learning experience as an interaction taking place between

equals—in this case pedagogic professionals and aviation professionals. This is a significant departure from standard student-teacher relationships and requires both professionals to complement and assist the other for effective learning to occur.

Monitoring of the Process to Maximize Learning

Initial processes of classification of students are precisely that: initial. There will always be differences among students, which may or may not be captured. Therefore, you cannot simply wait for courses to finish without an interim monitoring component.

In the best interest of students and organizations, it is necessary to detect those students who are the most advanced in each group and those who could advance at a faster pace. This monitoring strategy would allow for a number of students to obtain their certificate sooner, which would a) reduce the number of students in regular groups; b) provide the possibility of re-arranging the rest of the groups based on more complete linguistic information; c) maximize the expertise of prepared teachers, and; d) maximize use of the limited teaching time generally available to students and teachers in ESP programs. ■

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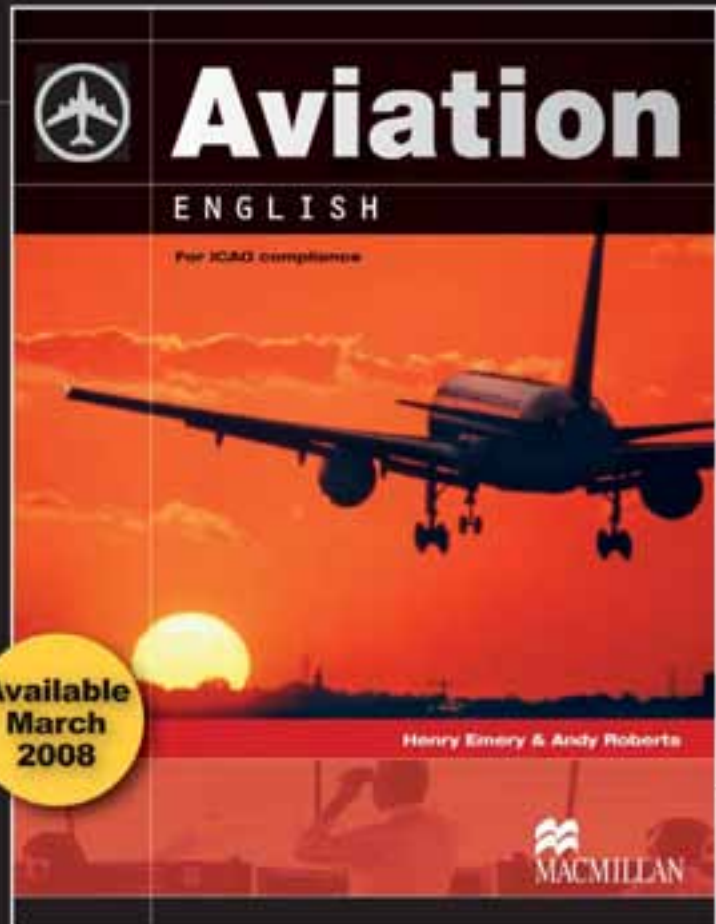
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Authors Henry Emery and Andy Roberts - speakers at the second ICAO Aviation Language Symposium 2007, Montreal.



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For more information please contact Charlotte Ellis at ch.ellis@macmillan.com



Security In Language Testing

Mr. Paul Stevens, Mayflower College,
Plymouth, UK

In such high-stakes, emotive testing, it is anticipated that some pilots and air traffic controllers will try to cheat in their attempts to achieve Operational Level 4. This paper looks at why they may do this, areas of test security which may be compromised and best practices in how to reduce the risk of cheating.

Little research has been published on security in language testing. This may in part be due to the fact that little has been done on the subject, but it is also no doubt partly influenced by testing authorities' reluctance to admit that candidates cheat on their test and the institution's understandable self-interest in not publicising how their test's security may be compromised.

Our experience at Mayflower College in running IELTS examination centres for the past 11 years, and our experience with the *Test of English for Aviation (TEA)* over the past 12 months has lead us to conclude that some language test candidates do undoubtedly try to cheat.

Key factors in determining whether a candidate will be inclined to cheat are:

- The candidate's desperation to pass the test.
- The realistic options at the candidate's disposal to pass the test without resorting to cheating.
- The candidate's nationality/cultural background.
- The security measures in place to prevent cheating.

In testing to meet the ICAO language proficiency requirements the stakes could hardly be higher. The results of the testing can have a significant impact upon people's livelihoods, careers and egos. The situation is further fuelled by controller/pilot resentment of the imposition of these new language proficiency requirements. In addition, the scale of this programme makes it inevitable that there will be differences in the way people are assessed around the world.

Learning a language takes time. Airlines and ATS providers have organisations to run, services to deliver, budgets to meet, and therefore cannot simply roster everyone on English language instruction until everyone achieves Operational Level 4. As a result, very few pilots/controllers are able to devote extended, intensive periods of time to improve their level of English. Under these circumstances, a candidate who is currently at ICAO Elementary Level-2 in each of the six skills (pronunciation, interactions, fluency, structure, comprehension, vocabulary) has minimal chance of reaching Operational Level 4 before applicable deadlines (*Editor's note: the 36th Assembly passed a Resolution allowing non-compliant States until March 2011 to achieve compliance, provided certain conditions are met by March 2008. Please see a list of these conditions on page 28*).

A lot of good work has been carried out by ICAO and others concerning the development of the descriptors, test design, criteria for examiners, etc. However, if a test is not secure then all the other good work is in vain.

The links of the "security chain" are many but key elements are:

- 1. People:** Many of us can be corrupted in the right circumstances.
- 2. Test Materials:** Question and interview content discovered by students in advance.
- 3. Database:** If a database can be hacked then test results can be changed.
- 4. Impersonation:** Impostors posing as candidates.
- 5. Certificate:** Counterfeiting.

Solutions to an extent depend on the testing solution employed (whether it takes the form of a face-to-face interview, is computer-based, is delivered over the telephone, etc.) but there are some common elements. Any system will only be as strong as its weakest link. It is possible to have everything (people, materials, etc.) in place, but, for example, if an unauthorised person discovers the password to a database then everything falls apart.

People

Administrators, interlocutors, raters, technical support, signatories on certificates... The advice is to choose them all very, very carefully, selecting as much for human qualities as for technical expertise. Security is simpler to control if the group of people is small and everyone is accountable. It is important to create a

culture that this is VERY serious work; it is all too easy for people to think procedures are overly bureaucratic and to start to cut corners.

Ideally interlocutors and raters should not know the candidates they are testing. If the rating is done remotely (using a recording of the test) then best practice is to use numbers to identify the candidate (rather than the name of the candidate). The greater the distance that can be created between the candidate and their examiner(s) the better.

Test Materials

If any test materials are compromised they MUST be withdrawn and never used again. This is an expensive inconvenience but needs to be adhered to. If hard copies are used, good practice is that they are stored in a lockable container within a lockable room. All test materials must be signed out and signed back in—if anything goes missing then it should be simple to trace it back to the person responsible.

Candidates will inevitably talk to each other about the questions they have been asked—a test therefore requires a sufficient number of versions. The test venue also needs to be chosen carefully to prevent, for example, tests being overheard. Finally, steps need to be taken to ensure that candidates do not secretly record the examination/ interview. The size of today's digital recorders does not make this a simple task but as a minimum measure no bags or coats should be allowed into the examination room.

Database

Few people who are ultimately responsible for a test are also IT experts. Good practice is not to accept an IT developer's claims that the system is secure—employ independent IT security experts to evaluate a system. The importance of the human factor in the security chain should not be underestimated however.

Any data transfer (for example, candidate data, results, digital recordings of interviews, etc.) should always be securely encrypted. Recommended practice is to have paper copies of test results as well as computer data. This provides the facility of having a trail to compare the marks in the database with the marks awarded by the examiners. Finally, a computer audit trail makes it possible to see who did what and when.

Impersonation

As a minimum, ID checks (passport / identity cards) should be shown at the time of the exam. Basic training should be given to examiners in how to match a face to a photo (for example, looking at the distance between the eyes and the ears). Training should also be given to spot fraudulent identity documents.

If any part of the test is conducted in groups of candidates (for example, a listening exercise) then passport/identity cards must be placed on each person's desk and be available for inspection by invigilators. Invigilators also need to check that the name written on the exam papers is the name which appears on the candidate's passport/identity card.

With the *Test of English for Aviation (TEA)* the candidate is photographed immediately before the test begins, the camera is connected to the computer and this photo is automatically uploaded into the candidate's database record. We can therefore be sure that the person who took the test is the person whose face appears on that person's certificate. The printing of the date and time on the photo serves as an extra security measure.

Certificates

The issuing of certificates should be strictly controlled and ideally centralised. It is recommended that a certificate numbering system (preferably which includes some random

numbers) is employed. Original signatures are more difficult to forge than pre-printed signatures as are dry seals when compared to wet (ink) seals. Tinted paper is more difficult to reproduce and watermarked paper is a recommended investment.

Conclusion

No system will ever be 100% secure. The key notion here is "affordable security", however, there are many potential test

candidates who appear to have ample motivation for cheating, are relatively well paid, highly educated and not without status and influence. Should some of these people decide to cheat it will not be simple to stop them. ■

“ In testing to meet the ICAO language proficiency requirements the stakes could hardly be higher. The results of the testing can have a significant impact upon people's livelihoods, careers and egos. The situation is further fuelled by controller/pilot resentment of the imposition of these new language proficiency requirements. ”

The Value of Content-based Language Training for the Aviation Industry

Ms. Elizabeth Mathews, Aviation English Services

The shift in the requirements for English training in the aviation industry necessitates a significant investment of time and financial resources, for individuals, airlines, air traffic service providers, training organizations, and national economies. The safety and economic impact of the ICAO language Standards obligate aviation English training providers to provide the most economical, efficient, and effective programs possible.

The ICAO Document 9835: Manual on the Implementation of ICAO Language Proficiency Requirements recommends **Content-based language** training as a way to economize and to maximize the effectiveness of an aviation English program.¹

A Changed Landscape for Aviation English

While the ICAO Language Standards apply to all languages used for radio-telephony communications, the greatest training challenge falls on the teaching of English. The most significant change in how English must be taught stems from the establishment of clear training targets, described in the ICAO Language Proficiency Rating Scale, for speaking and listening *proficiency*.

The requirement for speaking and listening *proficiency* means that aviation English testing must comprise *proficiency* tests, and not “pen-and-paper, grammar-focused, or indirect tests of knowledge about English.” Rather, Proficiency tests assess a candidate’s ability to use the language, in other words, their *communicative competence*. Testing for compliance with the ICAO Language Proficiency Standards must include direct tests of speaking and listening proficiency.

This is important because test methods affect training design, a phenomenon called *test washback*. Test washback refers to the effect a test has on training, or how the test method ‘washes back’ into the training. Typically, perhaps naturally, people want to see a direct correlation between training and testing; we want to learn what we will be tested on. In some fields, the correlation is obvious: in knowledge-based learning—history, mathematics, English literature, ground school for flight training—a direct teach/test correlation may be possible, and may, in fact, be a principle of good curriculum design.

Language Proficiency

However, language proficiency is not merely knowledge of a set of grammar rules or vocabulary. Language proficiency is a complex interaction of knowledge with a number of skills and abilities. Linguists continue to work to define what it means to know a language. In the 1980’s, the linguists Michael Canale and Merrill Swain² developed (adapted from the work of sociolinguist Dell Hymes and extended more recently by Professor Lyle Bachman³) a working definition of communicative competence that continues to be refined and elaborated. Communicative competence includes at least the following skills:

- **Grammatical Competence:** How the language is structured; how words and rules work.
- **Sociolinguistic Competence:** Understanding the social context in which language is used.
- **Strategic Competence:** Including compensation strategies, the ability to negotiate meaning, to clarify.
- **Discourse Competence:** How sentences or utterances combine to make coherent, whole texts.

In addition to the areas of linguistic competence necessary to be proficient in a language, other factors also impact language use: context, knowledge of the world, verbal working memory, and verbal processing abilities. The point of this necessarily too brief introduction to linguistic competence is to illustrate that language learning is a complex process, and does not lend itself to simple memorization of lists of items.

Operational Level 4

Although understanding what constitutes language proficiency is complex, ICAO Operational Level 4 is a practical and achievable level of proficiency.

It is important to educate stakeholders—the pilots and air traffic controllers, their managers and administrators, and their civil aviation authorities—about the nature of language *proficiency* testing and training so that they are better able to make informed choices. Like flight training itself—an activity that requires a mature and serious commitment of time and effort to achieve target levels of competency—so too does English language training.

Fit for Duty

Even with the best diet and exercise plan, improving one's level of physical fitness takes time. Measurable improvement will not be achieved overnight, nor after a week or two of, even, intensive exercise. Positive results will begin to be evident after a month or so of committed effort. Other people will need longer to show good results, perhaps two, three, or four months—again depending on the amount and quality of effort expended and starting levels.

Increasing one's language proficiency is similar. It is no more possible to 'cram' for a language proficiency test than it is to prepare overnight, or in one week, or perhaps even one month, for a fitness exam.

Until research is published from aviation-specific programs, we can only estimate how long it will take to achieve Operational Level 4. Research extrapolated from academia and from the few long-term aviation English training programs indicate a minimum of 100-200 hours will be required for learners to progress from a mid-to-high pre-Operational Level 3 to the Operational Level 4.

An aviation English 'cram' school will simply, unequivocally, not work. That does not mean that it is not possible to establish effective and efficient language training. It is, in fact, quite possible to develop aviation-specific English language programs which are of high value and high-interest to pilots and air traffic controllers.

Two aspects of language training which directly impact program effectiveness are *delivery* and *content*.

Delivery: The Role of Computer or Web-based Learning

Pilots and air traffic controllers are busy professionals. Their tight schedules require that we provide some language instruction on-line in order to maximize efficiency. This is obvious but not simple, as developing CBT (or WBT) is more

costly than simple classroom materials and therefore more risky to develop. In addition, the effectiveness of computer-based language learning has not been much studied yet. Nonetheless, in the context of aviation English, CBT is essential, and common sense and experience tell us that some aspects of the ICAO proficiency requirements will lend themselves to learning via CBT, such as Vocabulary acquisition, Grammar study and Listening practice. While CBT certainly has a place, it is inevitable that the speaking proficiency requirements necessitate some classroom training, too.

The most effective approach will be one in which the CBT *precedes* and *prepares* the learner for intensive classroom seminars.

Establishing a close relationship between CBT lessons that precede and prepare the learner for intensive classroom seminars enhances the efficiency of classroom time, the more costly part of an aviation English training program, when the 'down' time of the pilot/controller participants is factored in.

Program Content

Delivery aside, one of the most important variables that can impact the effectiveness of language teaching is program content. The ICAO Guidance Manual, (Document 9835, Chapter 4.4.11.), suggests *Content-based Language Training* (CBLT) as particularly suitable for aviation English training. There are a number of reasons why a content-based aviation English program represents the most effective and efficient training application.

CBLT is a proven method formalized in bilingual nations (Canada) in order to meet the urgent French and English language training requirements of the Canadian Civil Service, immigrant populations, and secondary education institutions.⁴ Content-based Language Learning is a well-researched methodology that combines language learning with the delivery of important informational content. In CBLT, *content* shares

equal importance with language instruction. The focus is on learning language in the context of learning about some other important content information.

All language learning requires a content focus. Consider English language training with which you are familiar. Many have had foreign language lessons that looked something like this:

Fill in the correct form of the verb:

Carla (salir) de la casa a las nueve.
(Carla leaves the house at 9:00.)

Juan (ir) al teatro.
(John goes to the theatre.)

El siempre (llegar) tarde al trabajo.
(He always arrives late to work.)

Ellos (comer) arroz.
(They eat rice.)

Some have referred to this as the LENAR Approach: 'Learning English for No Apparent Reason.' Those who have endured such language training may recall the frustration and boredom often associated with this type of lesson. What is lacking in the 'LENAR' approach is context and meaningful communication.

CBLT is not new. For centuries, perhaps thousands of years, humans have learned foreign languages *in context*. Focusing on the language itself as the sole object of study is a relatively new phenomenon. Adopting a content-based approach is going back to the roots of how humans have learned languages naturally. When we understand that every language lesson has some *content focus*, in addition to the language focus, then it is easy to grasp the sense of making the content focus relevant to the learners.

Content-based Aviation English

Every language lesson has some content focus, even lessons which are not part of a content-based approach. It is important to consider the specific needs of the target audience when we design language lesson content. Typically, the traditional aviation English lesson has incorporated

a range of aviation content into the language lessons.

As an example, consider one common aviation English lesson content focus: “*The Four Forces of Flight*.” This can be a meaningful topic for ab initio trainees, but it is perhaps less interesting, less relevant to the *professional* already-trained pilot or air traffic controller. In that case, the language lessons delivered via this content become the sole focus of the lesson. That is, the *content focus* of the language lesson is familiar to the learner but not meaningful in and of itself. The same may be true, too, for aviation English lessons which focus exclusively on radiotelephony communication or ICAO phraseology, lessons which are of value for ab initio trainees, but likely represent areas with which professional pilots and controllers are already quite familiar. For the professional pilot or controller, an aviation English lesson focusing on radiotelephony, phraseology, or the four forces of flight can deliver language content but do not provide any other meaningful content.

Doubling Value: Safety Content for Aviation English Curricula

Content-based Language Training can particularly effective for pilots and air traffic controllers for a number of reasons. In particular, the rationale for a content-based **safety-focus** in aviation English training is strong, as many aviation safety organizations publish and freely distribute videos and tool kits designed to improve the safety awareness of pilots and air traffic controllers. Most are published in English, and target English speakers at what ICAO calls the “Expert Level 6.”

Many ‘limited English proficient’ pilots and controllers are not able to easily access the safety information contained in such publications. Adapting such publications for the aviation English program makes the information contained there accessible to all pilot and controllers. Providing content-based, safety-

focused English training has a number of benefits to the pilots, controllers, to their organizations, and to the aviation industry:

1. It **doubles the value** of required language learning time by pairing language lessons with important safety content.
2. It **increases safety** awareness.
3. It provides **high-interest topics** in the language lessons, increasing learner motivation.
4. **Motivation** is a key factor in language-learning success. People naturally pay more attention to topics in which they have an inherent interest.
5. Time spent on language learning has a **positive impact** on progress.

A Checklist for Content-based, Safety-focused English Training

There is much information available in the language-teaching community about the value of Content-based Language Training. Organizations and individuals who wish to learn more about adapting CBLT for the aviation industry can easily find information on the Internet, in language teaching publications, or by accessing the references cited in this paper. In addition, the following checklist is provided as a simple device for use in planning program development or program evaluation.

1. **Content Value:** Is the content of the lessons relevant to the learner? Is the content very interesting to the learner? Can you identify true value in the content besides the language focus?
2. **Cohesion:** Does one unit relate thematically to the next unit? Are topics presented randomly or is there cohesion of topic choice in each language lesson?
3. **Rational:** What is the unifying theme of a curriculum, in addition to the language learning? What holds the lessons together?
4. **Context:** Are lessons presented in context? In a meaningful way?

In a very real sense, the ICAO Language Standards are not new; English has long been required for safe and effective radiotelephony communications. What is new are how the strengthened Standards impact training. Organizations can ease the impact of the significant training requirements by doubling language training with safety awareness. Increasing safety awareness not only is of interest to pilots, controllers, and their organizations, but increasing safety awareness benefits the entire industry, right down to the passengers. ■

Notes:

¹ ICAO Document 9835: Manual on the Implementation of ICAO Language Proficiency Requirements.

² Canale, M. and Swaine, M. (1980). *Theoretical bases of communicative approaches to second-language teaching and testing*. Applied Linguistics, 1 (1), 1 – 47.

³ Chappell, C., Grabe W., and Berns, M. “*Communicative Language Proficiency: Definition and Implications for TOEFL 2000*.” Educational Testing Service. Princeton, New Jersey. RM-97-3.

⁴ “Content-Based Language Instruction: The Foundation of Language Immersion Education.” Tedick, Diane, Jorgensen, Karen, Geffert, Terri. *The Bridge. ACIE Newsletter*. 4 (3), 1-4. Minneapolis, Minnesota. University of Minneapolis. The Center for Advanced Research on Language Acquisition.

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www.teachingenglish.org.uk/think/methodology/content.shtml



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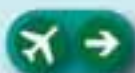
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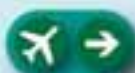
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ICAO Language Proficiency in Ab-Initio Flight Training

Ms. Angela C. Albritton
Aviation English Consultant

As demand for air travel continues to increase internationally, there is a growing need for pilots in many parts of the world. In order to deal with this pilot shortage, some airlines have started their own ab-initio flight training programs or send their cadet pilots to a number of large flight training organizations in English speaking countries. Although these airline cadet pilots are often selected using rigorous selection processes, the assessment procedures that are used to ascertain whether the cadet pilot's English language skills are sufficient for safe and efficient flight training are often invalid, not standardized or in worst cases even non-existent and not in line with the new ICAO language proficiency standards.

Problems Associated with Inadequate Assessment

Some airlines and flight training organizations, uncertain of how to evaluate a cadet's English skills, have looked to universities or the business community for guidance in this matter. They have required evidence of a student pilot's English language proficiency in the form of norm-referenced language tests, such as the TOEFL, TOEIC, IELTS or other grammar-based pen and paper assessment tests. In the past, this practice was understandable, as there was no international language standard to which the flight training community could adhere.

However, relying on scores from norm-referenced language tests, such as the TOEFL often causes two problems: accepting students into flight programs who do not have sufficient speaking skills for safe flight or efficient training, and; disqualifying other students who do have sufficient speaking skills for safe flight training but do not meet the required TOEFL score (ICAO Document 9835: Manual on the Implementation of ICAO Language Proficiency Requirements).

Few studies have been conducted on how non-native English speaking language skills influence the flight training process in an English speaking environment. Furthermore, only limited guidance on this subject is given from the civil aviation authorities, such as the FAA Advisory Circular No. 60-28. Responsibility for language assessment is placed upon medical examiners, flight instructors and/or check pilots, none of whom have received official language training in oral proficiency assessment and/or calibration training as part of their own certification process.

Another approach in dealing with the language proficiency question is to send cadet pilots with inadequate language skills to English-speaking countries for flight training in the hope that the students will pick up enough language skills during training. In addition to the lack of correspondence with the high safety standards in all other aspects of aviation training, this mindset can also prove to be rather costly. Patrick Murphy, a flight training director with more than 25 years of experience in working with international flight students both in the United States and China, knows this first hand.

"Airlines are often not aware of the financial cost of extra flight training that must be given to a cadet who is deficient in English," Mr. Murphy remarked, "or that the failure of just one or two students due to insufficient English skills can provide enough of a financial loss to an airline to pay for a quality aviation English program."

Other training organizations that have extensive experience working with pilots, such as the Defense Language Institute, are already aware of the benefits of investing in assessment and language training before commencing flight training. These organizations use oral language proficiency and placement testing in order to maximize training effectiveness and safety. Flight students deserve to know their language proficiency level prior to beginning training and how much time is needed for them to progress to an operationally safe level of English prior to flying in English-speaking airspace.

As extensive flight training is taking place in English speaking countries and with the implementation of the March 2008 ICAO language requirements, the need for preparing non-native English speaking flight students with communicative language skills prior to commencing flight training is becoming keenly obvious. This is where operators can benefit greatly by introducing a language protocol in accordance with the new

language proficiency requirements for pre-selection and placement based on the resources they have available.

Language Protocol for Pre-selection

Airlines and/or flight training organizations need to standardize their methods of testing flight training students prior to the commencement of their training. Norm-referenced language tests, such as the TOEFL are not appropriate to test flight readiness. Semi-direct and/or direct testing, such as an oral proficiency interview (OPI) have been found to be an effective assessment, if conducted by trained, certified and calibrated raters who are familiar with the ICAO standards and the rating scale (ICAO Doc 9835).

OPIs have been successfully used for many years by training organizations, such as the Defense Language Institute. However, research into oral proficiency testing demonstrates that untrained raters are less consistent than dedicated, trained raters (*Editor's note: please refer to "Standardization in Language Rating" on page 23, also in this section*).

Once OPIs have been conducted, raters can provide needs analyses in order to give personnel in charge of pilot selection and flight training directors an understanding of the specific language needs of individual cadets and/or larger training groups in accordance with the ICAO Rating Scale. This information can provide valuable information to an organization in respect to ab-initio selection and/or resources needed to place student pilots into effective training programs appropriate to their skills. A sample language protocol is illustrated below:

A cadet pilot's OPI rated at:

- 1. ICAO Operational Level 4 or higher** would be able to begin flight training, but could benefit from specialized language support during their flight training, such as intensive ATC communication practice and possible individual language tutoring on an as needed basis.
- 2. Strong ICAO Pre-operational Level 3** would be able to begin flight training within an estimated 4-8 weeks of intensive 5-6 hour per day, 5 days per week of communicative aviation English language training.
- 3. Weak ICAO Pre-operational Level 3** would be able to begin flight training within an estimated 12-16 weeks of intensive 5-6 hour per day, 5 days per week of communicative aviation English language training. More specific ESL modifications would need to be made and additional activities added to the curriculum in order to deal more effectively with the students' lower proficiency.
- 4. Students whose individual language skills are rated at an ICAO Elementary Level 2** would likely require a minimum of 6 months or more of content-based aviation English and general English in an intensive, highly communicative language environment.

Due to the length of language training required to obtain ICAO Operational Level 4, which can range from just a few weeks for students at a strong ICAO Pre-operational Level 3 to possibly many months required for cadet pilots at an ICAO Elementary Level 2 or lower, a strong case can be made for pre-selecting ICAO Operational Level 4 language qualified flight students.

"It is important to note that a high score on an oral proficiency test will not completely guarantee that an individual will never encounter communication problems during flight. In the specialized environment of aviation communications, even native-speakers of English may at times encounter communication difficulties, however they should have the skills to handle any unclear communications, much as would a native-speaker of English." (Mathews, n.d.)

Designing a Content-based Aviation English Curriculum for Ab-initio Training

Once organizations have conducted a language needs analysis, they can then move to the next step, namely if required, designing a content-based aviation English curriculum for their ab-initio students who do not meet ICAO Operational Level 4 language proficiency. All language learning has some focus and

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"content-based language learning incorporates subject matter content into language learning activities and has proven effective" (ICAO Doc 9835 Paragraph 4.4.11.). Flight training providers can use their own training curriculums as a foundation upon which to build. By using their own ground school lessons, materials and other resources commonly used during the flight training process, qualified language staff can, with input from the flight training department, develop a content-based aviation English program which incorporates standard radiotelephony practice, but includes all other linguistic aspects of flight training as well. Resources already available at the flight training facilities can be utilized for this.

Many large flight training providers have learning centers where computers are available for listening and viewing aviation CDs, DVDs and other computer based training. These materials can also function to enhance a student's listening comprehension and vocabulary skills in accordance with two of the ICAO holistic descriptors. By using a blended learning approach, with computer based training and classroom activities that are designed based on language functions, events, domains and tasks association with flight training, good learner progress can occur. Examples of appropriate aviation functions and domains can be found in ICAO Doc 9835, Appendix B.

When designing a curriculum for aviation English for ab-initio training it is important to include activities from many different flight training tasks. Designing a curriculum with mostly ATC communication practice will surely help the student pilot feel more confident in handling standard radio calls, but will not be of much use when he or she has to debrief with their flight instructor, request a weather briefing, speak to a dispatcher, report a technical problem, receive a non-standard clearance by an air traffic controller or any of the other tasks related to their training. Therefore a large variety of commonly used resources should be utilized, such as flight training manuals, checklists, aeronautical charts, aviation pictures in addition to activities such as total physical response (TPR), chair-flying, simulations based on actual instructor/ student, dispatcher/ student and mechanic/student interactions, interactions with a weather briefer, ATC communications, role-playing, attending safety seminars, etc.

Conclusion

The ICAO language proficiency requirements are setting a new standard for determining a minimum level of language proficiency for ab-initio training. It is beneficial for airlines and their flight training providers to ensure that a standard protocol is in place for their flight students to receive valid and reliable language assessments in accordance with these new ICAO language proficiency requirements prior to commencing flight training. By placing Pre-operational flight students into content-based aviation English classes, which make language learning an integral part of the flight training process, good progress can occur. The use of realistic flight training scenarios and authentic training materials, based on an actual flight training curriculum, not only help to prepare student pilots for ICAO Level 4 proficiency, but also provide pilot cadets with much valuable aviation content information in order to proceed through their flight training with fewer delays and/or failures related to insufficient language skills. ■

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Standardization in Language Rating: A Call for an Association of Aviation Language Raters

Mr. Henry Emery, Emery-Roberts, Plymouth, United Kingdom

In response to the ICAO language proficiency requirements, English language teaching for aeronautical communication is witnessing an unprecedented growth in approaches, methodologies and training materials. In this diverse language training environment, what every pilot and air traffic controller shares is the criteria by which their language proficiency is assessed.

Every testing programme and test instrument developed to measure the language proficiency of aviation operations personnel will employ the *Rating Scale* and *Holistic Descriptors* in each of the 190 ICAO member States. As such, the language rater plays a pivotal role in the language training and testing process. It is the language rating community that carries the ultimate responsibility for the effective implementation of the ICAO Language Proficiency Requirements.

Language testing in aviation is extremely 'high-stakes'. The professional lives of pilots and air traffic controllers at stake, and the operational capability of airlines and air traffic control centers and future budgets for language training and testing may be greatly affected by the results awarded by language raters. However, above all, it is ensuring a standard of safety in aeronautical communication worldwide that rests with the competence, skills and good judgment of the language rater.

Despite the 'high-stakes' nature of aviation language testing, language rating is, at present, an unregulated area of activity.

The Language Rater

In order to inspire the trust and confidence of the stakeholders in aviation language testing, language testers around the world must provide test results which are valid, consistent and reliable. In order to achieve this, it is essential that a global standard in the application of the assessment criteria is established. The levels of proficiency described in the *Rating Scale* and *Holistic Descriptors* need to be applied to the speech of aviation operations personnel in the same way in order to ensure a standard for clear and safe communication in the skies. Uniformity in what is considered 'Operational' features of

pronunciation, structure, vocabulary, fluency, comprehension and interactions needs to be established according to a standardized interpretation of the *Rating Scale* and *Holistic Descriptors*, regardless of what test instruments are employed and in what member state language testing is conducted.

As with the nature of the use of descriptors in the assessment of spoken language, the *Rating Scale* and *Holistic Descriptors* are open to interpretation. In listening to the same speech sample, what one rater may see as 'creative use of basic grammatical structure' (Level 4), another may see as poor control of

grammatical form (Level 3). One rater may feel that a pilot's speech is so heavily influenced by first language as to make it frequently unintelligible, awarding a Level 3. Conversely, another rater may be quite familiar with the pilot's first language,

and therefore find that the same speaker's speech 'rarely interferes with ease of understanding', and award a Level 5. As language raters come from a wide range of professional, cultural and linguistic backgrounds, nowhere is the issue of interpretation of assessment criteria more acute than in language rating for aviation.

Language raters are inevitably influenced by the following factors:

1. The rater's first language.
2. The level of English language proficiency (if the rater is a non-native speaker).
3. The degree of familiarity with aviation operations and aeronautical communication (if the rater has a professional background in language and linguistics).
4. The degree of familiarity with language and linguistics (if the rater has a professional background in aviation operations).
5. The degree of experience in language assessment and using language descriptors.
6. The degree of training in the application of the rating scale.
7. The extent and frequency of exposure to international accents.
8. The extent and frequency of exposure to a particular accent.

“ If the objective of the ICAO language proficiency requirements is to achieve a standard level of language proficiency among operations personnel for safe and effective communication, then a system for ensuring a standard interpretation of the assessment criteria and the reliability of test results around the world is fundamental in achieving this end. ”



Given the diversity of backgrounds of the people involved in language rating in aviation, there is an obvious need to establish a standard interpretation of the *Rating Scale* and *Holistic Descriptors*, and to 'calibrate' the international rating community.

Intra-rater Reliability

Studies show that individual raters are unlikely to produce consistent results over time, and that without calibration, the longer a rater works, or the higher the number of candidates rated, the more inconsistent the results become. To illustrate, a rater listens to a speech sample of a controller and awards a Level 5. Six months later, the same rater listens to the same speech sample, and awards a Level 4. These inconsistencies in an individual rater's performance threaten intra-rater reliability. As an individual rater may fail to produce consistent results over time, then a group of raters may fail to produce comparable and consistent results. This can occur at an organizational level, for example, within a team of six active raters in one test organization.

The same issue also occurs at a national level. In a member state where there is a national aviation training academy, an air traffic service provider, a number of airlines and several private training institutions, each with their own test instrument and group of raters, the reliability of test results from that state alone may be questionable.

When we examine the issue of inter-rater reliability on an international level, and consider the international context of language rating in aviation and the diversity of background of

language raters worldwide, then we see how the reliability of test results may be thrown into serious doubt.

Many different tests have been developed to assess the language proficiency of pilots and air traffic controllers with huge variations in quality and integrity and approaches to rater training. Nonetheless, it is essential that test results are not only reliable, but comparable. If the objective of the ICAO language proficiency requirements is to achieve a standard level of language proficiency among operations personnel for safe and effective communication, then a system for ensuring a standard interpretation of the assessment criteria and the reliability of test results around the world is fundamental in achieving this end.

An Association of Aviation Language Raters

It is the aim of this paper to propose a mechanism to set and maintain a global standard for the interpretation and application of the *ICAO Rating Scale* and *Holistic Descriptors*. Through international co-operation and self-regulation, an Association of Aviation Language Raters, an international panel of raters from operational and linguistic backgrounds, would work together to minimize variation and discrepancy in language rating. Such an Association would help language raters around the world meet a global standard, and to produce test results which are consistent and reliable. In order to establish of an Association of Aviation Language Raters, this paper proposes the following phases.

Phase 1: Consultation and Funding

An Association would need to:

1. Seek endorsement from ICAO.
2. Seek endorsement and funding from state regulators and aviation organizations.
3. Seek support from academic organizations, such as ICAEA, ALTE and ILTA.
4. Invite raters from operational and linguistic backgrounds to act as associates.
5. Formalise the structure and procedures of the Association.

Phase 2: Establishing a Language Rater Accreditation Service

An Association would need to:

1. Gather samples of speech of pilots and air traffic controllers from organizations around the world which are involved with testing English language proficiency for aviation.
2. Convene to:
 - Rate the gathered speech samples.
 - Produce guidance material for language raters on the standard procedure for the application of the Rating Scale and Holistic Descriptors.
 - Organize the rated speech samples and guidance material into 'assessment packs'.

Phase 3: Implementing a Language Rater Accreditation Service

The proposed procedure for rater accreditation is as follows:

1. A potential language rater applies to the Association of Aviation Language Raters for rater accreditation.
2. The Association provides an 'assessment pack' to the potential rater.
3. The rater rates the samples and returns the ratings to the Association for assessment.
4. If the rater has adequately demonstrated an ability to rate speech samples according to the standard set by the Association, an official certificate of accreditation is sent to the language rater.
5. A certificate of rater accreditation is valid for two years, after which the rater must re-apply for accreditation.

Principles of an Association of Aviation Language Raters

An Association of Aviation Language Raters would:

- Set a global standard in the application of the Rating Scale.
- Accredite language raters to rate for licensing purposes.
- Regulate, monitor and support the work of language raters.
- Serve the interests of the test taking community.

- Be answerable to the aviation industry.
- Be transparent.
- Be representative of the international community.
- Be democratic in its organization.
- Have associate raters with a limited tenure.
- Be made up of linguists and operations personnel.
- Be made up of native and non-native speakers.
- Be non-profit.

Conclusion

Pilots and air-traffic controllers deserve to be assessed by expert language raters who are sufficiently trained and qualified to perform the task. It is not enough to claim to be able to assess language using the *Rating Scale* and *Holistic Descriptors*; raters must demonstrate their ability to rate language according to a global standard.

Language raters need to inspire the trust and confidence of the test-taking community, and be accountable to the stakeholders in the aviation industry. An Association of Aviation Language Raters would work with the objective of establishing and maintaining standards in language assessment, pursuing professionalism, transparency and fair play in aviation language testing. ■



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Language Proficiency: A Pilot's Perspective

WHEN ICAO BEGAN THE PROCESS OF DEVELOPING NEW STANDARDS FOR LANGUAGE PROFICIENCY IN THE AIR TRAFFIC CONTROL ENVIRONMENT, IT WAS ESSENTIAL THAT PILOTS AND CONTROLLERS BE PART OF THE DISCUSSION. THE INTERNATIONAL FEDERATION OF AIR LINE PILOTS' ASSOCIATIONS (IFALPA) APPOINTED UNITED AIRLINES VETERAN CAPTAIN RICK VALDES AS THEIR REPRESENTATIVE, AND HE HAS BEEN CLOSELY INVOLVED WITH THE ICAO PROCESS EVER SINCE. HE SPOKE WITH THE *ICAO JOURNAL* RECENTLY ABOUT THE IMPORTANCE OF RECENT ASSEMBLY DECISIONS RELATING TO THE COMPLIANCE DEADLINE, AS WELL AS CONCERNS THAT PILOTS AND CONTROLLERS STILL SHARE REGARDING THE SUITABILITY OF THE TRAINING THAT IS CURRENTLY AVAILABLE TO THEM.

You've been associated with the ICAO Language Proficiency initiative since its outset, how did you come to be part of this process and what was your background prior to coming on board?

ICAO requested that the International Federation of Air Line Pilots' Associations (IFALPA) be part of this process when it was first begun and I was appointed as the IFALPA representative to the *Proficiency Requirements in Common English Study Group* when it was originally created in the year 2000. I started my flying career back in 1975 and have been with United since 1986. In another life, many years back, I spent three years flying out of Cochabamba, Bolivia, throughout South America, for an airline called Lloyd Aereo Boliviano.



Was the fact that Spanish is your native tongue part of the reason that IFALPA chose you to be its representative?

Without a doubt. The concept right from the start was to avoid placing someone on the panel who might not understand some of the issues for non-native English speakers. It was IFALPA's priority to place someone there who would have a more comprehensive perspective and that's the primary reason that I was selected.

Could you briefly describe what other perspectives were represented in the study group and discuss your role a little?

The study group was made up primarily of language specialists and regulators, while I was obviously there to represent the pilots' perspective. There was also another gentleman



Captain Rick Valdes (right), with Ms. Nuria Maria Sanchez Morales, International Affairs Assistance for Spain's Sindicato Espanol de Pilotos de Lineas Aereas (SEPLA)(far left), and Mrs. Angela Albritton, Representative for Aviation English Services, Inc. (center).

there from the International Federation of Air Traffic Controllers (IFATCA), providing input on behalf of his colleagues. In a sense you can think of the pilots and controllers in this situation as being the 'customers' for these new requirements, the end-users who eventually were going to have these new requirements imposed upon us. As pilots and controllers we were also there to try to educate the language specialists who had been assembled regarding the specifics of the language needs we experience on a more practical, day-to-day basis.

What are your feelings about how the process has proceeded? Do you feel this has been a successful undertaking thus far?

I think it has been a very successful process. I must admit though that for pilots and controllers there has been a great deal of concern about just what these new requirements would mean for their careers and their livelihoods. Many are worried that they won't be able to meet the new thresholds for proficiency that have been established. Enhancing safety was the reason that the new requirements were created in the first place.

That puts a great deal of emphasis on the need for effective training resources.

Absolutely. One of my greatest apprehensions is that there are still no clear standards or certification process that has been established with respect to training. There are testing standards that were agreed last September and which will soon be put in

“ I think the ICAO Council made absolutely the right decision in not extending the deadline, but rather providing non-compliant States with a three-year grace period so long as certain conditions are met and certain submissions are made prior to March 2008. It's my firm belief that, had the Assembly simply extended the deadline, March 2011 would have arrived and we would have found ourselves in exactly the same position we find ourselves today. ”

place, but nothing yet concerning training. Many English language institutions have obviously jumped at the opportunity represented by these new standards and the need for controllers and pilots in many States around the world to acquire a new level of English proficiency. This is a large and potentially very lucrative market for them, but I have great concerns that many of these

institutions are not adequately familiarizing themselves with ICAO Document 9835, which we have produced after years of study and consultation, and which contains everything they need to produce an effective course.

My worry is that many schools, in their rush to develop a new customer base, are plugging these students into existing programs that are not customized to the degree that they need to be in order to prove effective in the air traffic control environment, and that therefore many States and operators are going to be spending

time and money on courses that may, in the end, not be adequate enough to get their pilots and controllers up to the level of specific aviation proficiency that is going to be required. Many of these institutions and corporations refer to themselves as 'ICAO compliant', but there's no oversight with respect to what this actually means, and no process of accreditation or certification so that customers can enter into arrangements with educators reassured that they will be getting adequately informed about the specific requirements noted in Document 9835. In my opinion this description of being 'ICAO compliant' is currently being abused by some members of the language training industry.

Where does the ultimate responsibility fall to ensure that pilots and controllers are compliant with the new ICAO standards? What in your opinion would be a solution to help States and operators avoid what you've described above?

Currently airlines, or operators, are responsible for the level of language proficiency demonstrated by their pilots. States manage the testing to establish that proficiency, but the operators themselves must provide the training. For controllers it is usually the State that provides both the training and the testing. The advice I give to the members of my association is to tell their airlines to acquire a copy of Document 9835, read it, understand it; then obtain a copy of the CD which ICAO provides and which demonstrates the difference between Level 3, 4 and 5 compliance. Once their airline has understood the requirements fully they can then assess language training providers based on this understanding and hold them accountable to something concrete when the language training provider tries to tell them that they are ICAO compliant. This same advice should be followed by States or ATM providers who are needing to train their controllers.

There was a resolution passed at the recent Assembly which affected the compliance deadline, how do you feel about the appropriateness of the decisions that were made?

There was quite a bit of concern prior to this Assembly on behalf of States, primarily because many of them are still not compliant and the 05 March 2008 deadline was now getting closer and closer. I know that some States were putting pressure on the Council to postpone the requirement deadline—which in my opinion would have been a serious error. I think the Council made absolutely the right decision in not extending the deadline, but rather providing non-compliant States with a three-year grace period so long as certain conditions are met and certain submissions are made prior to March 2008 (*see sidebar, right*). It's my firm belief that, had the Assembly simply extended the deadline, March 2011 would have arrived and we would have found ourselves in exactly the same position we find ourselves today.

Any closing remarks you would like to make on behalf of yourself or IFALPA?

I would like to make the point that it is IFALPA's ongoing position that English should be the only language spoken by pilots and air traffic controllers. In situations where other languages are not part of the air traffic control environment pilots are able to listen to instructions being given to aircraft in front of them and aircraft behind them, and pilot access to all of this communication creates an overall sense of the environment they are entering and what they may need to expect with respect to holding instructions, etc. This type of situational awareness is extremely important with regard to the overall safety of that control environment.

In situations where other languages are being used that a pilot may not be proficient in, the pilot in these cases is basically alone and isolated. This can lead to scenarios where a pilot may try to interrupt emergency communications between ATC and another aircraft because they're not aware of that emergency. This creates a level of uncertainty in the air traffic control environment which therefore creates a potential safety liability that IFALPA feels is unnecessary. To maximize safety its our own position that English should be the only language spoken in the skies. ■



Required conditions and submissions which must be met or provided by non-compliant States as of the 5 March 2008 implementation deadline:

1. A timeline for adoption of the language proficiency requirements in their national regulations;
2. A timeline for establishment of language training and assessment capabilities;
3. A description of a risk based prioritization system for the interim measures to be put in place until full compliance with the language proficiency requirements is achieved;
4. A procedure for endorsing licenses to indicate the holders' language proficiency level;
5. Designation of a national focal point in relation to the English language proficiency implementation plan;
6. Make their language proficiency implementation plans available to all other Contracting States by posting their plans on the ICAO website as soon as practicable, but prior to 5 March 2008;
7. Notify ICAO of differences to the language proficiency Standards and Recommended Practices;
8. Publish differences to the language proficiency requirements in relation to the provision of air navigation services in their Aeronautical Information Publications.

Enabling the A380

by Mr. Yong Wang,
Chief—Aerodromes, Air Routes
and Ground Aids Section

WHILE THE WORLD CELEBRATES A NEW MILESTONE IN CIVIL AVIATION, WORK AT ICAO HAS BEEN ONGOING FOR OVER A DECADE TO ENSURE THAT AIRPORT STANDARDS WERE CLEARLY IN PLACE TO GUIDE THE INDUSTRY THROUGH THE SAFE AND EFFICIENT INTRODUCTION OF NEW LARGER AIRCRAFT (NLA) INTO THE WORLD'S COMMERCIAL FLEETS.

The world's first commercial flight of the A380, on 25 October 2007 by Singapore Airlines, was in many ways a milestone in global aviation. This accomplishment, however, required diligent advance consultations with relevant stakeholders leading to the development of important new airport standards that made it possible for the A380's introduction to go as smoothly as it did.

In the early 1990s, major manufacturers announced they were working on plans to develop aircraft larger than the Boeing B747-400—then the largest passenger airplane in commercial service. In response, ICAO carried out a study, from 1995 to 1997, with the participation of several States, selected international organizations and aircraft manufacturers, on new airport specifications for the NLA or "Code F" aircraft.

The results of that study led to Amendment 3 to Annex 14, Volume I, adopted in early 1999 by the ICAO Council and made applicable later that year. New specifications on airport physical characteristics for Code F aircraft were developed, as well as rescue and fire fighting (RFF) specifications for aircraft with maximum fuselage widths in excess of 7 m and lengths greater than 76 m. It should be noted that the ICAO airport reference codes used in Annex 14, Volume I are not designed for any specific aircraft type, but rather apply to groups of aircraft requiring the same airport physical characteristics, such as the A380 and the planned Boeing B747-8.

In order to accommodate the A380, many States have incorporated the new Code F standards in the design and construction of new airports. Existing airports where code F



Yong Wang, ICAO
Chief—Aerodromes, Air
Routes and Ground Aids.

aircraft operations are expected have also been taking action or are planning to expand or modify their facilities to meet the new requirements.

For example, Singapore Changi International Airport, the departure airport of the SIA A380 on its inaugural flight, has spent about USD 43 million on improvements such as widening runway shoulders, and runway-taxiway and taxiway-taxiway intersections, installing

upper deck loading bridges, and expanding the seating areas to handle A380 passenger loads. The airport will have a total of 19 gates available for the A380 in 2008. It will also have a maintenance facility with hangers that can accommodate A380 aircraft.

Sydney Airport, the destination of the SIA A380 inaugural flight, will have spent USD \$106 million upgrading its infrastructure before all the final modifications required to accommodate the A380 are completed in 2008. This work commenced in 2004, and included major airside modifications such as the widening of pavement shoulders to runways and taxiways, the re-alignment of taxiways, and the strengthening of the General Holmes Drive Tunnel under the main runway to accommodate the A380's increased weight.

New aerobridges have also been built at Sydney to provide access to the three main doors on the A380—one to the upper deck and two to the lower. Sydney Airport will modify six contact and three layover gates to ensure it has the latest facilities for the A380.

In order to provide States with information on issues concerning airport facilities and services, air traffic management, as well as flight operations which should be considered for accommodating NLA operations, ICAO published Circular 305 entitled: *Operation of New Larger Aeroplanes at Existing Aerodromes* in June 2004. This document provides guidance on conducting aeronautical studies including the development of suitable operational procedures, alternative measures and operating restrictions at existing airports which may not currently meet the relevant Code F specifications.

In support of implementation of Code F specifications in Annex 14, Volume I, ICAO has amended the *Aerodrome Design Manual*, Part 1 – *Runways*, and Part 2 – *Taxiways, Aprons and Holding Bays*, to provide guidance material to States. In cooperation with IATA, ICAO is also actively progressing with the revision of the *Airport Services Manual Part 5—Removal of Disabled Aircraft*. The Manual provides guidance on the removal of disabled aircraft and is intended to be used by airport and aircraft operators planning for the processes required to recover a Code F aircraft—such as the A380 and the planned B747-8. The revised Manual is expected to be published in 2008. ■



Newly-appointed Members of the ICAO Council

THE FOLLOWING NEW MEMBERS WERE RECENTLY ELECTED TO THE ICAO COUNCIL. BIOGRAPHIES FOR THE NEW MEMBER FROM MALAYSIA, MS. Z. SHAARI AND THE NEW MEMBER FROM UGANDA, MS. B. KAWOOYA, WILL BE INCLUDED IN A FUTURE EDITION OF THE *JOURNAL*.



Name: Hugo Dávila Severo ■ **Country:** Uruguay

Having logged more than 4000 flight hours on different aircraft, Hugo Dávila holds a pilot-in-command license with a flight instructor rating appropriate to turboprop flight simulators and aeroplanes. He began his aviation career in 1974 at the Uruguayan Air Force Aviation Military School, obtaining his pilot license in 1976 and graduating as an airman in 1977. In 1979, he was appointed as an instructor at the Aviation Technical School, a position in which he carried out administrative duties. At the same time, he began working as a transport pilot on multi-engined aircraft.

In 1985 Mr. Dávila was made Aircraft Commander and went on to discharge duties in various units of the Air Force. During that time he also carried out different training courses particular to the positions he held. He held the post of Commander of the 1st Air Brigade, a unit containing the Transport and Helicopters Division, whose principal missions involved air transport of personnel and cargo; support of the Uruguayan scientific base in Antarctica; humanitarian aid; presidential and VIP transport; and search and rescue.

Recently, Mr. Dávila held the post of Director General of Infrastructure. The organization he led is in charge of the coordination, planning and management of national airport policy. He also worked concurrently as Executive Coordinator of the Control Unit, which oversees the country's private airport concessions.

Mr. Dávila was named Representative of Uruguay on the Council of ICAO, taking up his post on 26 September 2007.



Name: Catalin Cotrut ■ **Country:** Romania

Catalin Cotrut's aviation education began with the Aurel Vlaicu Secondary School in Bucharest, followed by the Aurel Vlaicu Romanian Air Force Academy in Buzau. He holds a post-graduate diploma in international business law, a specialization in technological and managerial engineering, and has completed a masters program in air transport management. In recent years he has pursued extensive supplementary education through a variety internationally-accredited aviation training programs.

Between 1990 and 1998 Mr. Cotrut held the rank of Captain in the Romanian Air Force, flying primarily cargo and para-trooper missions. He later moved to the Romanian Civil Aeronautical Authority (CAA), where he performed field navigation and calibration responsibilities, acted as a Flight Operations Inspector, and from 2002 until 2004 held the position of Head of the Air Carriers Flight Operations Inspection Department. He is presently rated as a Captain on the B737 and the A320, and is also qualified as both an instructor and checkman on these aircraft.

From 2004 through 2005 Mr. Cotrut served as Deputy General Manager of Blue Transport Aerien, and from 2005 until 2007 he assumed responsibilities as Director General of the Romanian Civil Aviation Authority, including the coordination of safety compliance with ICAO standards, representing Romania in relations with national facilities and international bodies, and strategic guidance in the establishment of CAA priorities. From 2007 until his recent posting to the ICAO Council he has acted as the Deputy Director General of the CAA.



Name: Jaime Antonio Aparicio Borjas ■ **Country:** El Salvador

Aparicio Borjas is a licensed commercial pilot with over 3,000 hours of flight time. He received a bachelor's degree in administration from the Catholic University of El Salvador, and did a specialization in communications in London, England.

From 1990 through 2000 Mr. Borjas operated as a private entrepreneur in the Salvadorian telecommunications sector. In 2001 he was nominated by the Salvadorian National Association of Private Enterprise (ANEP) and became a Member of the Executive Council of the El Salvador Civil Aviation Authority, where he served until 2007.

Mr. Borjas is married with three children. He was named Representative of El Salvador on the Council of ICAO on 1 October 2007, and is an active participant in the Air Transport Commission and on the Unlawful Interference Committee.



Name: Bethuel Tijao Mujetenga ■ **Country:** Namibia

Eng. Bethuel Tijao Mujetenga commenced his civil aviation career in 1979 at Bolton College of Technology, and with Aer Lingus after he was licensed by the Irish Department of Transport and Tourism in 1982.

Mr. Mujetenga moved to Vancouver, Canada, where in 1989 he was awarded his BA from Simon Fraser University with a major in political science and minors in social sciences and public administration. He returned to his home country of Namibia that same year, when he was appointed Director of Civil Aviation. In 1996 he was awarded a post-graduate diploma in aviation management at the National University of Singapore, and a certificate by the Singapore Aviation Academy. He is currently Representative of the Republic of Namibia on the Council of ICAO, and Representative of the South African Community at ICAO for the period 2007-2010. Mr. Mujetenga is married to Mrs. Alwina and has two children, Peno and Uri.



Name: Carlos Veras ■ Country: Dominican Republic

Mr. Carlos Veras was named Representative of the Dominican Republic on the Council of ICAO as of 8 October 2007.

Mr. Veras is a commercial pilot and an air transport specialist, and he studied law at the University of the Caribbean in the Dominican Republic.

Both as part of the foreign service and of the Aviation Authority, he has held various positions of responsibility in his country, such as that of Secretary of the Board of Civil Aviation, Deputy Director General of Civil Aviation, and Representative and Delegate of the Dominican Republic to ICAO and LACAC at international aviation forums. He has also regularly attended important conferences, meetings and seminars organized by ICAO. Mr. Veras has been a delegate and a chief delegate in various bilateral air transport agreement negotiations.

His country's Aviation Authority delegated him to handle ICAO matters, including the candidature of the Dominican Republic for election to the Council. He has also actively participated in establishing the Dominican Republic's new safety framework, complying with ICAO's Recommended Practices.



Name: Hallgrímur (Halli) Sigurdsson ■ Country: Iceland

Halli Sigurdsson trained as an Air Traffic Controller in Iceland, the UK and Canada between 1977 to 1983, and after serving as an ATCO during the mid-eighties he was appointed as General Manager for the Reykjavik ATC Center in 1987. In 1990 he completed US Coast Guard search and rescue training, and in 1993 was appointed Deputy Director ATM in Iceland. Mr. Sigurdsson has worked on many ICAO committees related to North Atlantic operations and has served as a liaison officer between the Icelandic Civil Aviation Administration and the US military in Iceland.

Mr. Sigurdsson was hired by ICAO's Technical Cooperation Bureau as an ATM specialist to help restore vital services at Kosovo's Pristina airport following a serious aircraft accident there in 1999, and later worked for the Icelandic Crisis Response Unit (ICRU) and NATO as a military commander at the Pristina facility, overseeing the airport's transition from a military to a civil operation in 2004.

Following his work in Kosovo, Mr. Sigurdsson was transferred to Kabul, Afghanistan, where he served as ICRU/NATO military commander at Kabul International Airport until late 2004. In 2005 he edited and helped to develop the transition plan for the Kabul facility, and in 2006 he assisted as a special advisor to the Afghan Minister of Transport before returning to Iceland and resuming his responsibilities as Deputy Director ATM.



Name: Daniel Ruhier ■ Country: Switzerland

A long-time civil servant, Daniel Ruhier joined the Swiss Federal Office of Civil Aviation (FOCA) in 1972 during his studies of law and economics at the University of Bern. Starting as Head of Air Transport Statistics, Mr. Ruhier subsequently held various positions until his appointment as Head of the Air Transport Section. In 1980/81 he conducted the "Inter- and Intra-ASEAN Air Passenger Traffic Study" for the South East Asian Agency for Regional Transport and Communications Development (SEATAC) in Kuala Lumpur.

Daniel Ruhier made his first contacts with ICAO in 1978 as a Panel participant. He was subsequently member of both the ICAO Statistics Panel and the ICAO Air Transport Regulation Panel. He has also been heavily engaged in the Economic Committees and Working Groups of the European Civil Aviation Conference (ECAC).

Nominated Deputy Head of the Division of Air Transport and International Affairs in 1995, Daniel Ruhier frequently conducted bilateral negotiations on air services agreements as member of the Swiss Delegation. In 1999, he was appointed Head, Air Transport Companies Division, a position he held until 2004, when he was nominated Deputy Head, Flight Operations Safety Division.

Daniel Ruhier is still serving in the Swiss Air Force Staff Command, holding the rank of a Lieutenant Colonel. He post graduated at the Swiss Graduate School of Public Administration (IDHEAP) in Lausanne, with a master's degree in public administration (MPA). He was appointed Representative of Switzerland on the Council of ICAO, commencing his tenure on 22 September 2007.



Republic of Korea Accedes to the Montreal Convention of 1999

The Republic of Korea deposited its instrument of accession to the *Convention for the Unification of Certain Rules for International Carriage by Air*, done at Montreal on 28 May 1999 (Montreal Convention of 1999), during a brief ceremony at ICAO headquarters on 30 October 2007. This brought the total number of parties to the Convention to 81. ■

Shown on the occasion (from left to right) are: Mr. Gil-Sou Shin, Ambassador, Representative of the Republic of Korea on the Council of ICAO; Dr. Taieb Chérif, Secretary General; and Mr. Silvério Espínola, Principal Legal Officer, ICAO.

CANSO's Global Vision on The Future of Air Navigation Services

WITH THE PUBLICATION OF ITS GLOBAL VISION ON THE FUTURE OF AIR NAVIGATION SERVICES, CANSO HAS FOR THE FIRST TIME SET OUT A COMPREHENSIVE VISION OF WHERE THE ORGANISATION AND ITS MEMBERS BELIEVE

AIR TRAFFIC SERVICES NEED TO BE REFORMED OVER THE NEXT FEW YEARS. CANSO DIRECTOR OF COMMUNICATIONS CHRIS GOATER PROVIDES AN OVERVIEW FOR THE JOURNAL'S READERSHIP.

Commercial aviation is in transition from a strictly government-controlled transport sector to a much more competitive, liberalised operating environment. For many years, the ANS industry has been under pressure to adapt to new institutional arrangements and increased operational requirements, and air navigation service providers (ANSPs) are facing the challenges of the twenty-first century in which a global, seamless airspace is developed, based on cost-effective and efficient services, with sufficient capacity to meet the world's air transport needs.

In 2006, CANSO was tasked by its members with creating a vision which would set the framework for future policy and a strategy for the transformation of the

ATM business. The Global Vision is the fruit of those efforts.

CANSO Secretary General Alexander ter Kuile is adamant that the Global Vision will be the benchmark test by which all future CANSO policy will be judged: "The Global Vision for Air Navigation Services will be our guiding light as we prepare CANSO to meet the challenges of the coming decades" Kuile remarked. "The delivery of a seamless airspace system for our customers is a prize that must be reached. Not moving forward towards a truly global ATM system will have huge political and economic implications for aviation, as the world's ANSPs will not be able to deliver the airspace capacity and efficiency that future aviation requires."

CANSO's Global Vision supports the creation of a harmonised ATM service, much in line with ICAO's own Global ATM Operational concept. But CANSO's Global Vision adds new thinking on the institutional and operational changes that must be accommodated by all stakeholders, industry and government alike. It was completed in May 2007 with input from *all* CANSO members, and identifies areas of change needed within regulatory and operational domains, and the issues that must be addressed if a truly seamless global ATM system is to be achieved.

Ten Pillars of Action

The Global Vision is organised into ten pillars. Each pillar represents a particular aspect of Air Traffic Management. Of the ten pillars, the first and most important is the aim of delivering a seamless and efficient airspace. All the other pillars support or lead toward this overriding objective. We demonstrate this in the Global Vision through the use of a diagram that places seamless airspace at the centre (*see Fig. 1, P. 34*).

Identifying Leaders for Change

The unique nature of aviation operation and regulation, particularly in the area of air traffic services, produces the inevitable result that the work on the ten pillars and the drive towards a seamless airspace cannot be done by ANSPs alone. It was therefore crucial for the Global Vision to



set out whether it should be the industry, or government and regulators, who should act to lead a particular area of reform. The Global Vision solves this by identifying the key pieces of work, and allocating responsibility between industry, states, or a combination of both. This is described by the use of a simple graphic symbol of a government building, aircraft, or mix of the two, to illustrate the primary actor responsible for delivering the required change (see Fig. 2, P. 35).

Each of the ten pillars has a number of Change Situations—scenarios detailing a current position, and a desired future outcome. For example, the first and most crucial pillar, a ‘seamless and efficient airspace’, has three Change Situations (see Fig. 3, P. 35). By attaching an accountability symbol to each Change Situation, it becomes possible to see at a glance where the leadership should lie with regard to any specific pillar. Describing each pillar in this way, it is possible for CANSO members, government and international regulators, and other aviation stakeholders, to immediately identify the key issues involved in a particular ATM issue, the major changes that will be needed, and who is expected to lead those changes.

Change Situations

It is interesting to note the considerable number of Change Situations that require states to be the lead actors. Out of the forty-four Change Situations identified, twenty-four require states/regulators as the main change agent, twelve put industry in the lead, and eight have mixed responsibility. It is also the case that the responsibility can shift as the situation changes—in the seamless airspace example, the management of sovereign airspace moves from a solely state-run enterprise to a mixed enterprise once the transition has been completed. Other examples in some of the other pillars include Security, which moves from an industry-funded to a state-funded situation, and Safety, which moves from the state to a mixed approach. It should be noted, however, that while there are several examples of state responsibility evolving into a mixed state/industry partnership, no Change Situation moves from total state to total industry responsibility in one bound.

Turning Vision into Reality

The challenge now is to put in place strategies to begin the transformations identified in the Global Vision. It is clear that to achieve change across such a huge range of issues, CANSO

Fig. 1: CANSO Global Vision Ten Pillars of Action



itself will need to change. Throughout 2007, key leaders in CANSO have been looking at what the association needs to do to be able to lead the industry and create the momentum for government and regulatory reform.

A project called ‘Imagine 2010’ has begun, with the aim of laying the foundations for a refocused organisation able to play an even stronger role as ‘the global voice of ATM’. During 2008, a number of proposals will be put to the membership which, if adopted, will give CANSO the chance to turn its Global Vision into a clear strategy for a revolution in the industry. CANSO Secretary General Alexander ter Kuile is excited by the future, both for CANSO and the Global Vision:

“ Out of the forty-four Change Situations identified, twenty-four require states/regulators as the main change agent, twelve put industry in the lead, and eight have mixed responsibility. It is also the case that the responsibility can shift as the situation changes—in the seamless airspace example, the management of sovereign airspace moves from a solely state-run enterprise to a mixed enterprise once the transition has been completed. ”

“The CANSO Global Vision will assist everyone in the industry to confront the critical issues and questions, while proposing solutions to support us all in

achieving lasting improvements to global ATM performance. But achieving the Vision will not be easy: CANSO is not shirking from taking the tough decisions that will be needed to succeed. It is my great hope that the other actors in this vital time of change will also take the strides required to make our Global Vision a reality.” ■

Fig. 2: Global Vision Document: Identifying Leaders for Change

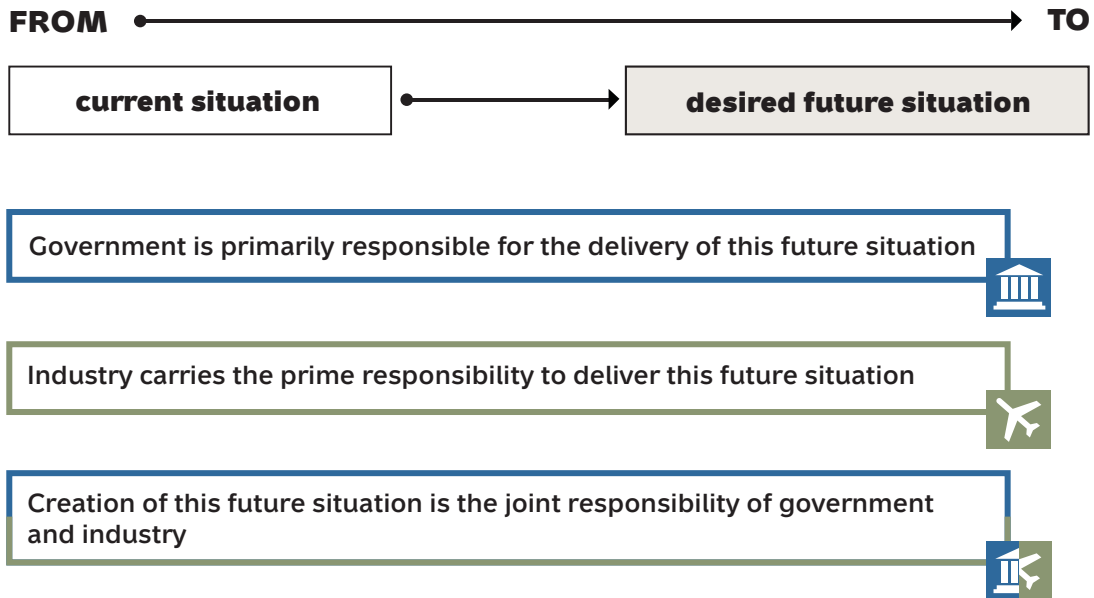
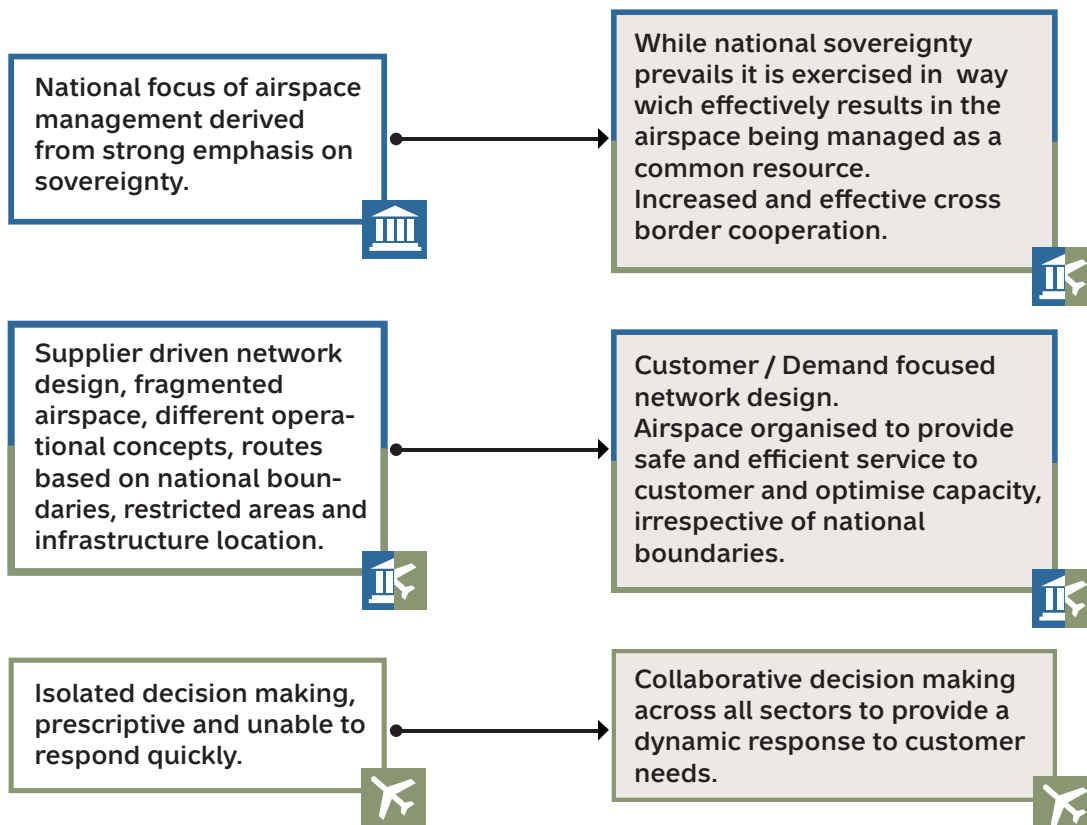


Fig. 3: Example of a Global Vision Pillar: Seamless and Efficient Airspace





A New Approach to Sovereignty

Alexander ter Kuile, Secretary General for the Civil Aviation Navigation Services Organization

There is much to be proud of in aviation. From the early days of flight a mere 100 years ago to the advent of the jet age 50 years later, aviation today is an industry that supports 32 million jobs and US\$3.5 trillion in economic activity. Our safety record is the envy of most other safety critical human activities. Passenger numbers worldwide are expected to grow from 2 billion a year to 2.5 billion by 2010, and yet upward to 4.5 billion by 2025.

Aviation underpins today's global economy. However, congestion and delay and environmental concerns threaten to be our Achilles' heel unless we do things differently.

The focus of industry—airlines, airports and air navigation services providers (ANSPs)—has been on increasing efficiency and improving performance. However, it will not be enough. Nor is our investment in infrastructure keeping pace with the explosive growth in air travel. For ATM to address the twin issues of safety and congestion, we need a paradigm shift in the way air navigation services are provided in order to allow a more efficient use of airspace.

The ATM system of the future will need to be satellite-based and aircraft-centric, allowing aircraft to travel closer together and fly more direct routes in an environmentally friendly manner. In this information-intensive environment, air traffic control will become less of a "control" function and more of an information management function, permitting the freedom to organise and operate in the most efficient and effective way possible.

So, what is getting in the way of real progress? Surprisingly, much of what needs doing has already been accepted and agreed to in ICAO, and it starts with the acceptance of a more mature understanding of "sovereignty".

Sovereignty refers to the exclusive right to complete political (e.g. legislative, judicial, and/or executive) control and decision by the State over its territory and the airspace above it. Sovereignty has to do with the ownership of airspace, and the decisions related to how air navigation services are to be provided in that airspace is an act of sovereignty.

Today, air traffic management is still largely organised along national borders, and the States' obsession with a rather dated notion of "sovereignty" is a hurdle to a more efficient organisation of ATM. The European initiative to "de-fragment" the airspace and improve the performance of ATM through the

creation of cross-border Functional Airspace Blocks has been progressing slowly due to the politics of sovereignty. In the United States, the FAA ATO still does not have an independent revenue source and funding for NextGen appears to be bogged down because the Congress feels it has the sovereign right to manage the NAS.

CANSO's vision of a globally integrated, harmonised and interoperable aviation system that will deliver the necessary capacity and a seamless service experience in a safe, efficient and environmentally friendly manner is highly dependent on a more mature understanding of sovereignty being adopted by States. Such a mature understanding of sovereignty does not require an amendment to the Chicago Convention.

Within ICAO it has long been accepted that air traffic management (ATM) needs to be functionally organised, while airspace needs to be organised following operational requirements and delineated in relation to the nature of the traffic route structure, rather than national borders. Further, previous ICAO Assemblies have recognised that State sovereignty and borders should not be affected by the implementation of the next generation air transportation systems.

Autonomy for the ANSP, and its separation from the regulatory oversight function is also well-established in ICAO guidance material. It is evidenced that greater financial and operational autonomy for the ANSP has encouraged a business approach to service delivery and an improved quality of service. Further guidance material exists for charging of the services provided, allowing the ANSP to recover its costs and a reasonable return on assets.

In essence, ATM should be allowed to organise and operate in a manner that will allow it to improve delivery of its services in a more safe, efficient, cost-effective and environmentally friendly manner. For an industry that has helped bring about globalisation, ATM should be allowed to globalise itself.

The need for review of the international governance of civil aviation is clear, for it is time to leave old notions behind that may have been relevant in the 20th Century. It is time to address the institutional hurdles that hamper real progress being made in realising a globally integrated, harmonised and interoperable aviation system. Let's start by adopting a more mature understanding of sovereignty that is fully aligned with the political, economic and social realities of today's globalised world. ■

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Tel.: +43 (0)732 6794-0
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P.O. Box 52-1345 Miami, FL 33152 - U.S.A.
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