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Governance, Technology and Training: Safety's Strengths

The international community has taken significant steps to advance safety oversight and address systemic weaknesses through measures such as the ICAO Global Aviation Safety Plan, the Global Aviation Safety Roadmap and the harmonized and uniform implementation of Safety Management Systems (SMS).

Compliance with ICAO SARPs and the implementation of efficient safety oversight systems are vital to our modern understanding of aviation safety and the mutually supporting data now being derived from SMS, safety-audit and accident and incident investigation (AIG) activities, but the effectiveness of these various tools and measures can still remain insufficient if governance issues, technological modernization, and high level training standards—considered to be a key element in ensuring performance efficiency—are not meaningfully addressed.

Governance, in this case, is understood as the capacity of a State to exercise its authority—both in the organizational and regulatory realm and in the areas of oversight and surveillance. This is based on the need for permanent and 'incentivised' consolidation of the professionals comprising a civil aviation administration team and related bodies. This capacity to exercise authority also affects government credibility with respect to aircraft operators, aircraft maintenance organizations, airport authorities, air navigation services providers and the industry as a whole.

When an assessment is carried out leading to the preparation of a technical co-operation project, an alarming combination of factors repeatedly comes to light; namely the obsolescence of a substantial amount of airport and air navigation equipment and the inadequate organization and management of personnel training and administration. This



is a virtually perfect formula—not for safety enhancement—but rather for reducing aggregate system efficiency and increasing safety risk levels.

Well aware of this 'perfect storm' are the more than 600 aviation technical co-operation experts who work with contracting States every year on major projects in our sector. These men and women are hard at work strengthening local aviation authorities, rectifying deficiencies identified by USOAP audits, assisting operators with aerodrome certification, updating and adapting aviation regulations, implementing safety management systems and modernizing airport and air navigation infrastructures.

All these experts carry out their work in accordance with State objectives concerning the development of the full spectrum of civil aviation activities, and each and every one



of these activities (aerodrome planning and construction; air traffic control; communications; licensing; flight operations; airworthiness; accident investigation; training center modernization; personnel strategy; aircraft registries; the transport of dangerous goods) are now guided by the new and more comprehensive safety approach now being implemented and pursued by ICAO. This approach, if it is to be effective, must be championed by the uppermost State leadership and requires full organizational compliance and commitment in order to permeate civil aviation's broader values and culture.

In the specific field of air navigation, numerous technical co-operation projects fostering the progressive implementation of CNS/ATM systems have thus far had a significant impact on safety. Airspace user confidence, both domestic and international, has increased through the gradual and effective exercise of air traffic control by ATS units—several of which have been outfitted with state-of-the-art aeronautical equipment and systems by their respective administrations.

Decades of experience have demonstrated that a technical co-operation project provides for an aviation framework that revolutionizes air navigation services management, enabling integration of ATS data and total radar and communication coverage throughout a respective airspace.

Bilateral technical assistance between ICAO and contracting States is also enhanced by the ever-increasing implementation of regional technical co-operation safety oversight projects (*COSCAPs—see page 30 for a review of current approaches in the Asia-Pacific Region*). These projects are part of a shared effort to formulate regulations for common use by neighbouring States and to establish mechanisms for regional inspection, training, and technology transfer. Through their systemic interaction, these elements will make it possible to eventually consolidate regional safety policies.

Clearly, there is an international consensus that ICAO should spearhead this process via an intensive programme of activities involving the entire aviation community. The

Organization's aim is to focus safety actions in a prioritized and harmonized manner and through a holistic and participatory approach.

Although this process is now much more complex and therefore more difficult to communicate in a manner that truly reflects its full scope and objectives, in the end ICAO's message remains a very simple one:

We save lives. ■

Ricardo Heighes-Thiessen
Director, ICAO Technical
Cooperation Bureau

Integrated Safety Management

Applying higher priority to operational safety measures



With ever increasing amounts of data available for analysis by its safety experts, ICAO has begun to shift its focus toward the development of more measurable internal processes that will be

tailored based on how substantially future data reflects their success in dealing with stakeholder-agreed, top-level safety concerns. Captain Daniel Maurino spoke recently with the *Journal* about this profound change now getting underway in ICAO as the Organization's Air Navigation Bureau seeks to ensure that it 'talks the talk' and 'walks the walk' when it comes to aviation safety.



For many years now, ICAO and the greater global aviation community have been developing programmes and tools to facilitate the collection of operational safety data relating to a variety of fields. Aviation safety has been one of the highest priority areas in this regard and, as the first complete cycle of the ICAO Universal Safety Operational Audit Programme (USOAP) under a comprehensive systems approach draws to its conclusion in 2010, the data that has been collected from this and other initiatives has become a focal point for the consideration of ICAO's safety leadership as it contemplates how it will improve the Organization's design and development of safety-related programmes for the decades ahead.

ICAO's Air Navigation Bureau (ANB) holds primary responsibility for the Organization's fundamental safety initiatives and it is the ANB leadership that is now driving the paradigm

shift in how ICAO will respond to and make use of the significant amount of safety data that has become increasingly accessible to its decision makers in recent years. As part of these fundamental safety initiatives, a new Section within the ANB, the Integrated Safety Management Section (ISM), has been recently formed to organize and effect changes related to safety management in the most efficient and cost-effective manner possible.

An Air Navigation Safety Group (ASG), composed of ICAO Officers selected on the basis of their expertise in areas of relevance to the safety management objectives of ICAO, supports the new ISM Section—providing it with strategic vision and direction. The objectives of the ISM Section are to develop, with the support of the ASG, the Internal Safety Management Process (ISMP) and eventually an Integrated Safety System (ISS).

At the present time, the membership of the ASG includes **Vince Galotti** (ICAO structure and functions), **Marcus Costa** (accident/incident investigation), **Henry Gourdji** (safety auditing and oversight), **Yuri Fattah** (process control), **Tom Mistos** (data analysis), **Miguel Ramos** (safety management) and **Dan Maurino** (secretary of the ASG).

The ASG will be influential in determining how ICAO will begin to leverage the incredibly valuable safety data now at its disposal. Although the collection of this data in and of itself has been a monumental task in many respects, as will be the

development of effective programmes and partnerships to ensure that new data continues to flow in a coordinated manner into ICAO, data alone will not solve some of the problems affecting safety-challenged States and the broader aviation community.

“In many ways, aviation is data rich but still information poor,” remarked Captain Dan Maurino, Chief of the ISM Section and formerly project manager of ICAO’s Safety Management Systems (SMS) programme. “ICAO and other external sources collect vast amounts of data but, until now, the aviation community as a whole has not spent an equal amount of energy on the analysis of and derivation of practical intelligence from this data. In the past this has generated situations where programmes have been launched that were founded as much on opinion as on the actual information that was available, which can have a negative impact on resource allocation and essentially means that our safety dollars are not being as well spent as they might be.”

In the near term (Phase I—next 12 months), the ASG will first be soliciting stakeholder input with respect to possible methods that might be employed to integrate the safety data currently available from government and industry sources. The stakeholders will thus be composed of States/organizations with experience in safety data collection and analysis, and this integration would then enable the development by ICAO of a blueprint for a set of metrics to support the effective delivery of its safety services. These metrics would

be specific to the needs of the ICAO business and performance framework and would support the next generation of safety oversight audits that are expected to be based on the notion of ‘continuous monitoring’ (*editor’s note: for more on continuous monitoring please see the “Data Determinations” article on page 9*).

Phase I is also planned to be used for the development of, or agreement on, a tool that will enable States to augment their safety data collection, analysis and exchange capabilities. This tool would be readily available and easily accessible by a large user community and would be designed to accommodate even those States with limited experience regarding safety data collection and analysis. An upcoming safety practitioner’s roundtable to be held at ICAO in early fall 2008 (September 16–17) will be used as a brainstorming session on these topics by the participating States and organizations.





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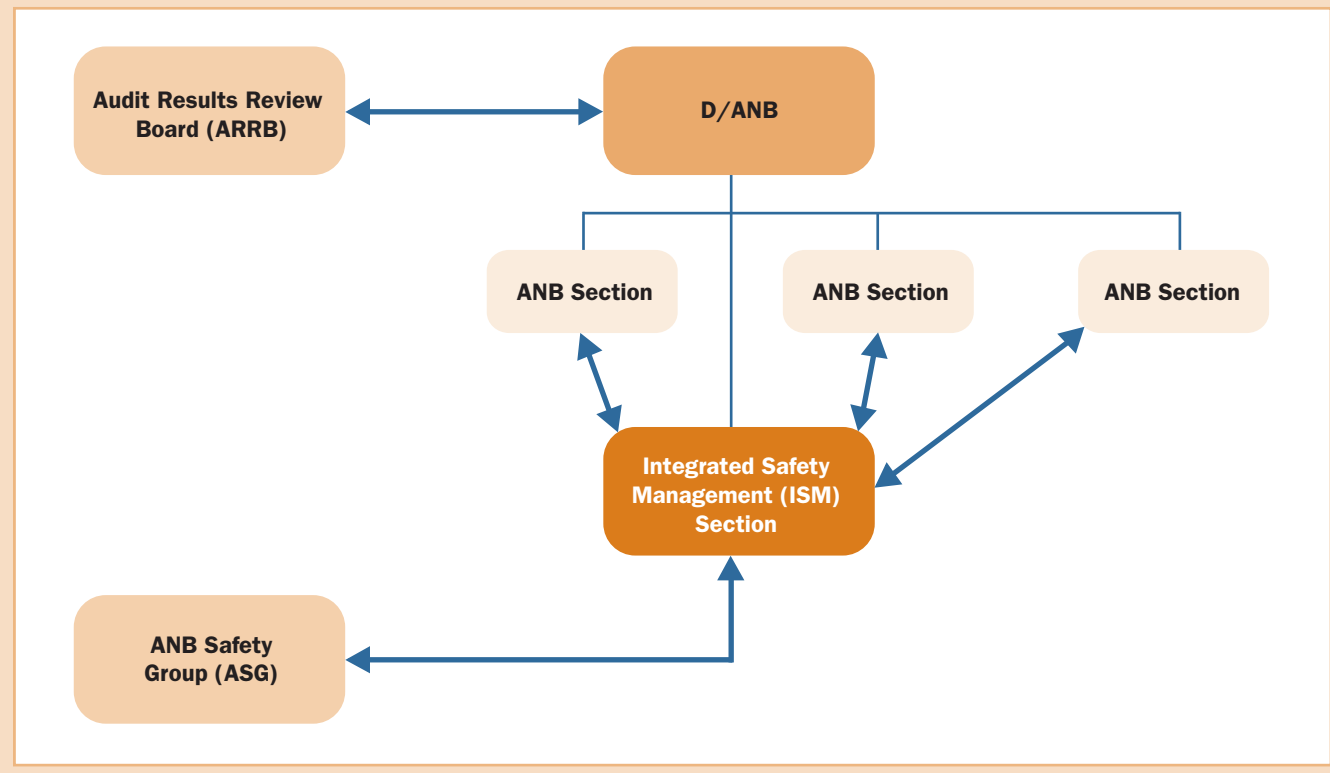


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THE FUTURE ICAO ORGANIZATIONAL SAFETY STRUCTURE

The following reflects current planning based on a three-year timetable featuring the establishment of appropriate safety metrics, consultations with States on the tools that will be used to validate and share safety related data, the consolidation of the Internal Safety Management Process (ISMP) at ICAO, and the development, deployment and management of Organization-level safety intelligence.



As developments progress, Phase II (24 months) of the ASG's current timetable would then see the consolidation of the Internal Safety Management Process (ISMP) at ICAO, while Phase III (36 months) would witness the development, deployment and management of Organization-level safety intelligence within ICAO leading to the development of the ICAO Integrated Safety System (ISS).

"In a very basic sense ICAO is now undertaking a process similar to what it has been recommending States should pursue with respect to their own safety objectives," Maurino commented. "The Organization's new pursuit of an ISM system reflects the understanding that internal processes need to be more data-responsive and that to properly inform our deliberations surrounding this evolution we also need to harmonize safety data collection and safety data convergence on an industry-wide basis."

Maurino went on to note that this process of mapping top-level safety concerns and then measuring ICAO's effectiveness in providing programmes and standards that deal effectively with the issues surrounding and supporting them is very similar to what it has been asking States to do with respect to the development of their own State Safety

Programmes (SSP), or to what it has been asking of industry when helping operators to employ Safety Management Systems (SMS). By measuring the effectiveness of its own processes and successes in this manner the ANB leadership is showing its determination to 'walk the walk' as well as 'talk the talk' when it comes to aviation safety.

The new structure under discussion has as its initial, short-term objective to deliver a blueprint of this internal safety management process by April of next year, against which ICAO will be able to measure the success of its activities in relationship to the list of top-level concerns based on the data being returned. It will then make targeted determinations about how it will be allocating future resources based on the information that the data will be providing.

"In a period of belt-tightening industry wide," Maurino concluded, "these measures will go a long way to ensuring that ICAO is being as responsive and as effective as possible to the States and the industry it serves with respect to improving safety on a continuous, dynamic basis." ■

Data determinations



As ICAO's Universal Safety Oversight Audit Programme draws closer to its 2010 completion deadline for all Member States, ICAO safety officials have begun to apply the lessons gleaned from the vast

amounts of data that have been generated, and proposals are now under discussion concerning how the Organization will adapt and evolve its safety monitoring activities to better target the priority areas that the audits have helped to reveal. Henry Gourdji, Chief of the Safety Oversight Audit Section, spoke with the *Journal* about the alternatives on the table and the promise being demonstrated by the new Continuous Monitoring Approach now under consideration.

For close to a decade now, the ICAO Universal Safety Oversight Audit Programme (USOAP) has been accumulating extensive amounts of data regarding aviation operations and infrastructure in ICAO's Member States. With its first round of audits under a comprehensive systems approach soon to be completed, the Organization, as part of its ongoing evolution toward a more performance-based approach to all of its activities, has begun to analyze this data with the objective of designing new programmes that will help establish Key Performance Indicators (KPI) enabling ICAO to measure the success of its new initiatives in this area against its first and always most important strategic objective—the enhancement of global aviation safety.

This new approach to aviation safety should encourage States to take a stronger self-monitoring role through the establishment of their own safety programmes, overseeing

the implementation of new Annex developments and ensuring their aviation sectors' continued compliance to ICAO's Standards and Recommended Practices (SARPs).

The recent analysis of audit findings enabled the identification and quantification of safety concerns for States at national, regional and global levels. ICAO was then able to evaluate respective safety impacts and consider the various options available to improve SARP compliance while assisting States in establishing an effective safety oversight system. Officials are already using the data at hand as they look for ways to improve and enhance these methodologies and one of the most promising results of these analyses has been the new proposal that ICAO should begin to adopt a Continuous Monitoring Approach (CMA) once the Comprehensive Systems Approach (CSA) audit cycle is completed in 2010.



“With the data we have in hand from the comprehensive USOAP audits that have now been concluded, we’re asking States to develop their own action plans that cover both immediate and longer term safety objectives,” began Henry Gourdji, Chief of the Safety Oversight Audit (SOA) Section. “Using the tools that we now have in place and additional mechanisms and assistance that will be put into place over time, one of the Organization’s objectives is to assist Member States in establishing effective safety oversight of their industries and service providers and also to establish and audit their own State Safety Programmes (SSP) while ensuring their industries implement Safety Management Systems (SMS)”.

A promising beginning

The original objective of the USOAP was to promote global aviation safety by conducting regular safety oversight audits of all Member States. These audits determine a State’s implementation of required safety systems and its compliance to ICAO SARPs. Launched on January 1, 1999, USOAP superseded the recommended but purely voluntary SOA programme that had been established in 1995. Since its initiation, the USOAP has been managed and run by the SOA Section of the ICAO Safety and Security Audits Branch.

Between 1999 and 2004, USOAP audits and audit follow-ups were planned and conducted on an Annex-by-Annex approach. Based on the information gained from these audits, the ICAO Council decided in 2004 that it was time for USOAP to evolve from this Annex-by-Annex system to a process called Comprehensive Systems Approach (CSA) auditing—an auditing methodology that focuses on a State’s overall safety oversight capabilities.

The CSA covers all safety-related Annexes and provides for a more comprehensive and cost-effective approach to auditing. Audits conducted under the CSA process, started in April 2005, proved instrumental in helping ICAO gain a much clearer picture of Member States’ varying degrees of SARP compliance and safety oversight capability.

Through USOAP, ICAO officials have identified fundamental weaknesses in the safety oversight systems of many States, including significant differences in the safety Standards being applied on a State-by-State basis—precisely what ICAO seeks to avoid as it continues to move toward global uniformity through its leadership in all aspects of aviation safety regulation.

Audit results have revealed problems in the areas of personnel licensing,

aircraft operations and airworthiness of aircraft; however, the majority of audit findings under the current cycle relate to new audit areas such as aerodromes, air navigation services and aircraft accident and incident investigation. While the existing approach has served its purpose well up until this point, it has also become clear that continuing along this path could prove both lengthy and expensive.

“We now have a very mature foundation of data that has come in from all the past and most recent audits of the Member States,” said Gourdji. “Based on these results, we’ve been able to ascertain that approximately one third of the ICAO Member States have greater than a 50 percent lack of effective implementation of the eight critical elements of a sound safety oversight system. That’s higher than we expected to discover, but with this data we’re now able to prioritize much more effectively and really concentrate on the specific States and specific areas of aviation activity that need ICAO’s assistance and attention. The USOAP CSA has been very useful therefore and it will continue to be maintained for States that require this level of examination and re-examination, but ICAO also has to learn from this new data and adapt itself accordingly where required.”

The promise and potential of Continuous Monitoring

Continuous monitoring, still in the conceptual phase, is a system by which ICAO could oversee, on virtually a real-time basis, the safety oversight capabilities of Member States while ensuring they develop, maintain and apply regulations that conform to the Organization’s SARPs.

As stated in an August 2008 concept paper, the CMA is an evidence-based approach to safety management that systematically identifies deficiencies in a State’s safety oversight capabilities. It assesses safety risk factors and implements strategies to rectify

deficiencies and mitigate those risks. Through continuous monitoring of the State's safety oversight capability, poorly designed or implemented safety controls can be identified and improved—thus enhancing a State's safety performance.

CMA requires a harmonized and consistent approach to overseeing the activities of all States. The initial challenge is to set up a communication infrastructure that allows ICAO HQ to monitor States' safety performance and all activities being conducted by ICAO Regional Offices or other international organizations in a coordinated and streamlined manner.

“The biggest challenge under the continuous monitoring approach is to place the collected information at the fingertips of the States who need it,” Gourdji said. “If we're no longer systematically conducting our own comprehensive audits and, instead, collect only certain types of information depending on the specific State in question, the challenge becomes presenting and updating the information in a validated manner that is sufficient in the sense that all States will be able to make meaningful determinations about their own programmes and oversight capabilities. To achieve this we're going to need centralized and web-based database tools that can be employed to both collect and present the data in real time.”

This centralized database would be fed with continuous information submitted through different sources such as the State Aviation Activity Questionnaires (SAAQs), Compliance Checklists (CCs) and audit protocols. Within the database, queries would be developed to search for established safety performance indicators. These indicators would prioritize those States needing audits while also targeting the specific areas requiring examination. A State's continued updating and application of the SAAQs and CCs will also serve as an indicator of its degree of participation and compliance.

SAAQs, Gourdji explained, will be carefully reworded so ICAO will know about any organizational changes, new legislation, personnel changes, and more. They will also be designed in a fashion that allows for more transparency—a vital component of CMA.

“ICAO will provide the tools that will allow States to carry out their own internal audits by establishing their own Continuous Monitoring Programme (CMP) and by using our well-established protocols,” explained Gourdji. “They will be able to compare pre-existing and evolving regulations against the ICAO SARPs, audit their own SSP and, while this is going on, feed us all their collected data so that ICAO can monitor the internal audit results. Based on this data and other indicators, ICAO will be able to determine where we have to focus our attention within that State. What this means is, rather than the current process of sending out a whole team of auditors to conduct an entire CSA audit, we will be able instead to take the data, find the problem areas

and then send a specialist or a small, prioritized team to provide specific solutions where needed.”

CMA implementation options

The proposed CMA process is based on previously implemented ICAO USOAP-CSA reporting tools and software. Consequently, a limited number of additional auditing tools would be required in order to enable the implementation of CMA. ICAO will endeavor to enhance and introduce new web-based applications with the objective of facilitating the participation of Contracting States in the CMA process.

Given this, Gourdji doesn't expect States will see a large increase in what they are required to do, but there will be some changes in how the system will be run when implementing the CMA and, according to the concept paper, several steps must be taken in order to do that.

The first step is to collect safety data that will become the evidence necessary to determine a State's safety oversight capability. The data can be derived from both internal and external sources and can pertain to any part of the State's safety performance. Second, the oversight capability must be analyzed and ascertained by looking at all the pertinent data. At this stage the State's current safety performance indicators may be compared with its own safety performance targets and thresholds as well as global and regional data.

With this data and analysis, ICAO officials can identify the State's safety oversight capability. Also, a risk assessment process scrutinizes the safety risks to identify safety deficiencies and determine the seriousness of any consequences in terms of probability of occurrence and severity. The process identifies safety risks that would weaken the State's overall safety performance, either currently or in the foreseeable future. This analysis can be both qualitative and quantitative and the deficiencies are prioritized depending on the level of safety risk that their consequences pose.

The CMA process then calls for strategies to be developed and implemented. Beginning from the highest-priority safety risks, several options for managing the risks may be considered. As a risk management strategy, an administrative or onsite intervention may be recommended, planned and coordinated with the assistance of the local ICAO regional office. Interventions may encompass anything from safety recommendations to full scale audits in an effort to restore or address identified deficiencies within the State.

In the end, feedback is required to close the loop. Full-scale or limited monitoring activities might be required to validate the implementation of corrective actions and evaluate how well the new strategy for the enhancement of the State's safety oversight capability is performing. Ultimately, only verified



transforming ATM Services in Kazakhstan



Mr. Sergey Kulnazarov, General Director

Strategic priorities identified by ICAO are also priorities in the enterprise operation.

The Republic of Kazakhstan gained independence in 1991 after disintegration of the USSR.

Kazakhstan is located in the center of Eurasian continent, part of it is in Europe, the other part is in Asia. The country's gross area is over 2, 7 million square kilometers. Population is some 16 million. Kazakhstan is the eighth largest country in the world, the second largest country in CIS after Russia.

The transcontinental route from Europe to South East Asia passes through airspace of the Republic of Kazakhstan. This is the basic route for air traffic flow. Transit flights through the upper airspace of RK account for over 2/3 of total air traffic volume. Aggregate number of flights controlled in 2007 was more than 150 thousand. The traffic shows sustained expansion over the past seven years. Annual increase is about eight per cent, the same trend is forecasted for the future period.

To ensure coordinate access to air navigation services for all users the government of RK established in 1995 the state-owned air navigation services provider in the form of the Republican State Enterprise Kazaeronavigatsia. Kazakhstan has been the member of ICAO from 1992 and aims to implement ICAO standards and recommended practice in operational activity. Strategic priorities identified by ICAO are also priorities in the enterprise operation.

In addition to its main goal of fulfilling flight safety requirements the Kazakhstan air navigation services provider prioritizes quality in its activity. Our effective work is based primarily on prevention of flight delays through fault of ATM team. Owing to well coordinated work of ATM specialists over the past seven years we haven't had a single flight delay for reasons related to air traffic control.

This stability in the ATM services has been achieved by enterprise development in two basic ways.

The first way is taking comprehensive measures to increase qualification of the enterprise personnel, particularly of air traffic controllers. The measures include:

- Initial training of air traffic controllers

The initial training is carried out both in national institutions and foreign training centers. The national schools are Academy of Civil Aviation and the enterprise's own Air Navigation Center. The foreign center that trains specialists for our enterprise is Air Navigation Institute in Riga (Latvia), a traditional partner of Kazaeronavigatsia in vocational training of controllers. Within a one year period Kazaeronavigatsia trains some 30 - 40 specialists both in ATM and AIS. From 2004 more than 90 specialists of Kazaeronavigatsia attended initial training programs in educational centers, at present another forty eight students attend ATM courses

- Advanced training

These courses are attended by our specialists both in the own training center and in many foreign institutions in the United Kingdom, Czechia, Latvia, Singapore etc. On an average, advanced training is taken by some 180 -200 specialists per year, but a need in training increasingly grows and in 2007 some 300 air traffic controllers, engineers and technicians attended different courses including English courses. The enterprise employs six hundred sixty air traffic controllers who work in four enlarged ATM centers and eighteen Towers.

- Language proficiency upgrading

Special attention during staff training is drawn to implementation of Resolution A32-16 «Competence in English Language for Radio Communications» taken at the 32nd session of ICAO Assembly and the subsequent decision of ICAO Board dated March 05, 2003 regarding achievement of working level IV requirements. The enterprise has developed and carries out the plan of transition to a new standard



scheduled up to 2011. The main ATM centers conduct ongoing English language training of specialists with involvement of instructors from UK. This approach allows to significantly improve air traffic controllers' knowledge of English standard radio exchange phraseology in accordance with ICAO standards.

Generally, the essential part of Kazaeronavigatsia's expenses is made to train its personnel. This approach complies with transport policy of European Council that stresses that investment in human resources is a critical step to improvement of the aviation industry's efficiency and competitiveness.

The second way to ensure ongoing growth of effectiveness is unceasing targeted modernization of air navigation facilities.

The key process in the field of ongoing growth of air navigation services safety and efficiency is establishment and development of automated system of air traffic control (AS ATC). The basic platform for AS

ATC has been established in the Republic of Kazakhstan over the past ten years. As a result, instead of previous eighteen FIRs, nowadays four enlarged regional centers control air traffic on the country's territory. In addition, the procedure has been launched for inclusion of operational Towers into the automated system.

Automated system centers are updated on a permanent basis. For instance, at present a new AS ATC center is under installation in Aktobe that will control air traffic in entire Western region of Kazakhstan including Towers in Uralsk, Atyrau and Aktau. Thus, all western flight information regions together with Towers will be controlled by a single Center and constitute parts of an integrated Center.

Operation of AS ATC centers is supported by radar information from a branched structure of different radar stations. The total number of radars in Kazakhstan is over fifty units. The radar surveillance system is also constantly upgraded. From 2007-2009 alone, thirteen radars of different types have been installed in Kazakhstan.

Naturally, creation of enlarged control zones requires special actions on development of effective aviation communications system. For example, the Central Kazakhstan AS ATC Center in Astana alone provides air traffic control in area covering over 47 per cent of entire Kazakhstan territory. Kazaeronavigatsia established an effective digital telecommunications network for transmission of large volumes of information with security over 0,9999. The network serves for radar information delivery from radar position to AS ATC center providing air-ground and ground-ground communication. To illustrate the network scope and level it should be mentioned that over 35 satellite communication stations have been installed during the network creation.

Nevertheless, despite of such large scaled investments in personnel training and modernization of air navigation facilities Kazaeronavigatsia has not increased tariffs for air navigation services since 1998. The enterprise even does not raise tariffs due to inflation. It has the lowest tariff among all air navigation services providers of neighboring countries. Moreover, Kazaeronavigatsia thinks these tariffs are sufficient for covering all operational costs and implementation of its upgrading programs. Our enterprise is confident that this way to ensure quality services with simultaneous absolute fulfillment of safety flight requirements will guarantee sustainable development of Kazakhstan air navigation services provider in future.

Sergey Kulnazarov
General Director
Kazaeronavigatsia RSE

reductions of safety risks will be employed to determine if the process has served its purpose for meeting performance expectations. These validations and evaluations may require onsite activities that could be accomplished with the active involvement of ICAO regional office resources and inputs. Depending on the outcome, new data might be required and the full cycle reiterated in order to refine the State's safety oversight capability.

Toward a communications-based and transparent safety culture

Civil aviation safety improvements have relied on the development of a transparent culture that encourages the sharing of safety information. While this sharing within the international civil aviation community was originally based primarily on information contained in accident and incident investigation reports, it has evolved over time to encompass a much larger data set that permits all civil aviation stakeholders to improve safety oversight. In fact, according to Gourdji, at the most recent Directors General of Civil Aviation Conference (DGCA) held at ICAO HQ in March 2006, all States have committed to transparency and sharing their audit results. As of July 2008, all Member States that have been audited since 1999 have provided their consent for the release of relevant audit information to the public.

"We're not only talking about ICAO anymore when we refer to this new system of instant safety data access and transparency," Gourdji explained. "Yes, we will now expect that any pertinent information generated by activities at one of our regional offices or through an ICAO regional cooperative programme (COSCAP, see page 30 for more details) initiative will become instantly available to all of ICAO's internal safety stakeholders, but as well we're seeking to build upon our existing agreements with outside organizations such as IATA, EUROCONTROL, EASA, etc., in order to fully

develop this new approach and new culture and truly take it industry wide."

The research into moving toward the CMA approach is currently being conducted under Assembly Resolution A36-4 (Application of a continuous monitoring approach for the ICAO USOAP beyond 2010), which directed the Council to examine the feasibility of all options—including continuous monitoring—that could be implemented at the end of the current audit cycle in 2010. It is understood that this research will continue to be bound by the key safety provisions and objectives contained in Annex 1—*Personnel Licensing*, Annex 6—*Operation of Aircraft*, Annex 8—*Airworthiness of Aircraft*, Annex 11—*Air Traffic Services*, Annex 13—*Aircraft Accident and Incident Investigation*, and Annex 14—*Aerodromes*.

Gourdji outlined how the process has been unfolding and what the next steps will be as ICAO continues its evaluation of the various options now on the table.

"The concept paper on CMA was just sent out in early August, as well as a governance document formalizing a study group that will be chaired by myself and select members of the ICAO Secretariat. We in turn are being provided with guidance and input by a special ICAO 'Champions Group' comprised of the Chief of the Safety and Security Audits Branch, the Director of the Air Navigation Bureau, as well as all the Regional Directors. Finally, an additional advisory group has been formed from members of the Air Navigation Commission, safety experts from concerned international aviation organizations, as well as representatives from the EC and various Member States who have already begun taking steps similar to those contained in the CMA."

Looking to the future

During the first quarter of 2009, Gourdji and his colleagues will present their

study group results to the Council. The results will describe the advantages and disadvantages of various approaches to aviation safety—ranging from a full-scale follow-up approach to making the switch to continuous monitoring. The Council will consider all the information, which will include the costs of each option, and decide which route will be best for ICAO to pursue.

Gourdji remarked that maintaining the option and capability of sending entire teams into States to conduct full-scale audits will probably never be completely ruled out, if only because there remain certain States that continue to have significant shortfalls in their safety oversight capabilities. In these types of cases, even if ICAO were to adopt the CMA, the scope and capacities of a full audit team would still need to be counted upon.

"The bottom line is that ICAO will continue to send full-scale audit teams when there are States that need it," Gourdji said. "Similarly, States that require a limited team will get that limited team, and States only in need of a fact-finding mission or perhaps simply a Regional Officer to validate certain information will have those resources targeted and sent to them."

Either way, by tailoring its safety responses to the particular needs of the State—be it through the CMA or other options now on the table—ICAO will without a doubt be fulfilling its global aviation safety leadership role much more efficiently and effectively in the near future. As the essential and invaluable CSA audit cycle draws to an end in 2010, the Organization will be well positioned to continue providing the guidance and resources that States expect from it. ■

A more proactive approach

ICAO's Flight Safety Section encompasses a wide range of crucial air industry sectors and programmes that significantly impact upon the day-to-day safety and security of global aviation activities. Section Chief Mitchell Fox and some members of his team spoke recently with the *Journal* about the dramatic redirection of his section's priorities as it moves to place greater focus on implementation-related activities.

ICAO's constantly expanding and evolving reach covers every aspect of global aviation. Now, as major projects continue to solidify, the Organization is looking to shift its approach to focus not just on setting global Standards but also on an increasing number of activities geared toward implementation, training and education. This change is a key element of the new direction being pursued by ICAO's Air Navigation Bureau (ANB) and by the Flight Safety Section (FLS) that oversees a number of important areas under the ANB umbrella.

"Developing new Standards, guidance materials or technical instructions just doesn't suffice," said Mitchell Fox, Chief of ICAO's Flight Safety Section. "On certain fronts we're not getting the rate of implementation that we should get so the Organization as a whole is refocusing—from developing Standards to putting greater emphasis on the actual implementation of those Standards."

ICAO's FLS will henceforth play a greater role to further the goals of uniformity within the industry. By training trainers, explaining principles in detail and reducing room for varied interpretations of Standards through effective guidance materials and education, ICAO hopes to see an increase in global consistency over the next five to 10 years.

"It's a tough shift but it's a very important shift," said Fox. "In terms of safety, this Organization is all about Standards but those Standards must lead to the desired level of compliance and uniformity."

FLS is responsible for the development of Standards, Recommended Practices, procedures and guidance material related to the operation of aircraft, certification of airlines and airworthiness of aircraft, the licensing and training of personnel and the safe transport of dangerous goods by air.



Mitchell Fox
Chief
ICAO FLS



Henry Defalque
Technical Officer
Licensing and Operations
ICAO FLS



Katherine Rooney
Technical Officer
Dangerous Goods
ICAO FLS



Hartley Elder
Technical Officer
Airworthiness
ICAO FLS



Nicole Barrette-Sabourin
Technical Officer
Training
ICAO FLS

In addition, the Section is responsible for the Controlled Flight into Terrain Programme, ICAO aviation training standards and policies, the safety aspects of air transport liberalization and aviation security issues associated with flight operations.

Within each facet of FLS, team leaders are staying on top of new developments in the technologies and methodologies related to their areas of expertise while continuing to modify, enhance and implement practices. With the skyrocketing cost of fuel now consuming most of the commercial aviation sector’s priorities and concerns, the planned transition will not be easy but eventually the changes will allow strong advancement toward more uniformity and consistency.

Writing and rewriting: the evolution of documents

In keeping with this strategy, ICAO’s efforts to rebuild some parts of Annex 6—*Operation of Aircraft*, from the ground up are starting to take hold as new provisions have gone into effect as early as July 15, 2008.

Annex 6 is one of the pillars of international civil aviation, Fox explained, and although it has been updated on a nearly annual basis, ICAO and industry representatives found that, in the case of Part II, *International General Aviation – Aeroplanes*, updates were not reflective of modern developments affecting today’s general aviation aeroplane industry. Therefore, the way in which Annex 6, Part II, addresses more sophisticated aeroplanes, such as jets and heavy aeroplanes operated in this civil aviation sector, was completely overhauled. Though the sections dedicated to smaller aircraft remain relatively untouched, strong strides have been made toward aligning Annex 6, Part II, with industry best current practices for the more sophisticated aeroplanes. This was partly achieved through valuable partnerships with the International Business Aviation Council (IBAC) and International Council of Aircraft Owner and Pilot Associations (IAOPA).

“This was one of those situations where we recognized it was an area we needed to address but internal resource allocations just weren’t permitting it to get done,” Fox said. “Of course, a certain degree of caution must be exercised whenever the industry is writing documentation for the regulators. To this end there was an extensive review process at ICAO completed by working groups within the ICAO Air Navigation Commission, by the Commission as a whole and consultation with ICAO Contracting States. Overall, it was a very successful project. These partnering organizations did an exceedingly responsible job and they helped us finish the overhaul far faster than we could have alone.”

These recently established provisions will help bring States together and set them on a more harmonized path, helping to rectify a situation that had been growing out of control as various States were writing increasingly divergent rules and regulations for this vibrant sector of civil aviation. This lack of uniformity in regulations from State to State is exactly what ICAO is trying to avoid and having these new Standards in place is another push toward more harmonized worldwide systems.

The changes to Annex 6 will continue as ICAO looks to modify and update other important and complex components. For instance, fatigue management, which covers the flight and duty time of the crew, will eventually evolve into fatigue risk management as a panel of world-renowned experts research the issue and upgrade the current documentation. Extended diversion time operations, often noted as a controversial topic, will go under the microscope as well. A task force that involves both the regulators and the industry will look at the implications and risks of aircraft operations far from a suitable airport for emergency diversions.

Addressing contemporary issues

Upgrading Standards to better suit States and contemporary times is an issue across the board as other FLS sectors tackle

their own rewriting issues. For example, personnel licensing and air operator certification are also falling under the spotlight. Henry Defalque, FLS Licensing and Operations Technical Officer, said a new pilot licence scheme is being implemented globally and current mandates demand proof that States are properly implementing the new licence requirements. Working under the guidelines of Part I and Part III of Annex 6, air operator certification Standards are also under review and the update will be applicable by November of this year while ICAO officers also look to amend Doc 8335—*Manual of Procedures for Operations Inspection, Certification and Continued Surveillance*, in light of these new Standards.

“Safety is, of course, always one of our main concerns,” Defalque said. “We’re also trying to ensure that air operator certificates are more easily recognized by all States. For now, it is a major issue to fly into places like the United States, China, Europe and others. We’re trying to create a universal system that reduces these trans-border certification issues.” Citing Annex 1— *Personnel Licensing*,

will cover helicopter flight simulation training devices.

Airworthiness Guidance: tailoring advice to regulating authorities

In a continuation of efforts to update documents, regulations and guidelines, ICAO is rewriting the *Airworthiness Manual* in a way that is better tailored to the processes of each State. Where the manual was once designed to adhere to the format of the Annexes, it will now be reoriented to better reflect States’ internal structure and responsibilities.

Once an aircraft leaves the assembly line, owners must register it with the State of Registry, maintenance must be programmed and approved by that State, and safety instructions must be complied with, explained Hartley Elder, ICAO FLS Airworthiness Technical Officer and its resident airworthiness specialist. Where the manual once paid little heed to the pivotal role of the owner and the State of Registry and simply went up through the Annexes numerically, the new manual will be interconnected in a fashion that actually

The move to revise the manual was greatly influenced by safety oversight audits and, as the writing process continues, the major findings of recent audits will be incorporated into the manual as well (*Editor’s note: for more on the scope and content of ICAO’s safety oversight audit programme, please refer to “Data determinations”, on page 9).*

Dangerous Goods: understanding, regulating and training

Annex 18 deals with the “Safe Transport of Dangerous Goods by Air.” In general it sets down broad principles but one of the Standards requires that dangerous goods be carried in accordance with the *Technical Instructions for the Safe Transport of Dangerous Goods by Air*. States are required by Annex 18 to have inspection and enforcement procedures to ensure that dangerous goods are being carried in compliance with the requirements of the Technical Instructions.

Dangerous goods are carried regularly and routinely by air all over the world. To ensure they do not put an aircraft and its occupants at risk there are international Standards which each State, under the provisions of the Chicago Convention, are required to introduce into national legislation. This system ensures governmental control over the carriage of dangerous goods by air and gives worldwide harmonization of safety standards.

The newest of the Annexes, Annex 18 first came into effect in the 1980s and, along with the detailed specifications of the Technical Instructions, has evolved into a document with multi-modal implications drawing on the cooperation and input from a number of organizations. As Dr. Katherine Rooney, Technical Officer, Dangerous Goods explained, safety has long been the driving purpose of Annex 18 discussions but, with time, security has increasingly become an additional and important focus to the work in this area. For Dr. Rooney, the improvement of the



Defalque said qualification criteria for flight simulation training devices, contained in Doc 9625, are getting a major refurbishing as well—by expanding the current 75-page document to two volumes of more than 700 pages. The new draft of Volume One, for aeroplane devices, will be reviewed by ICAO this year and officially published in 2009. The second volume, slated for 2010,

shows the regulating authorities the exact steps to take for specific aircraft. Elder described the shift as part of a growing effort to realign the focus from the design and construction of aircraft to the process of ensuring the aircraft remain airworthy during their entire service life, a process called ‘continuing airworthiness.’



speed by which ICAO can address new developments in this area, as well as new approaches to training and other tools to enhance field awareness, are at the top of her priority list.

“Unlike other Annexes, Annex 18 reaches well beyond the airport,” Rooney began. “Airlines are dependent not only on their own personnel and processes but on those of the shippers who package, classify and label goods before they reach the airport. This has implications not only for operator oversight of dangerous goods but also for how ICAO designs and distributes emergency addendums and other advisories that need to impact all dangerous goods safety stakeholders virtually simultaneously.”

Because of the seemingly endless contact list, informing all the disciplines in all the States is a difficult task, Rooney explained. Current investigations are looking into how the Organization could be better adapted to relaying this type of information.

This situation was brought into very clear focus recently when a gas cylinder that had been offloaded and put into storage in Dubai exploded, injuring one person. The explosion was large enough that, were it to have happened in a cargo hold in flight, it would have been sufficient to bring the aircraft down. Because it was a flight from the United Kingdom to Dubai, the United Kingdom Civil Aviation Authority (UKCAA) launched an investigation. Based on the interim findings, there was a request for an emergency addendum from ICAO and, after an emergency working group was formed in April, ICAO Council approval was given in June.

“By ICAO standards this was an extremely fast turnaround,” Rooney said. “But it still wasn’t fast enough.” Some of the current investigations going on in her area are looking into how ICAO processes could be better streamlined to address just this type of emergency concern.

Another area of concern is the denial of shipment of radioactive materials—even those that may have been properly packaged and documented. Many States have added in extra layers of bureaucracy that prevent the shipping of time-sensitive and lifesaving materials such as radiopharmaceuticals. Because of their very brief half-lives, this has become a major issue for the International Atomic Energy Agency (IAEA) as they look to ease these State-by-State regulations. With a facilitation panel in place, ICAO is working closely with the IAEA and the World Health Organization (WHO) to reach this objective.

Describing it as one of her “hobby horses,” Rooney noted that there absolutely needs to be more emphasis on training as well. Thus far, the ICAO safety oversight audit process has revealed deficiencies in this area.

As officials look for ways to motivate States to implement training programmes, Rooney said it is

important to look beyond just the aviation component. From the ground to the sky, goods, dangerous or not, pass through many hands and, as the airline industry saw in December, all it takes is one mistake—one improperly packaged gas cylinder—to have a potentially catastrophic result.

Training and implementing: ICAO takes an applied approach

Citing the diminishing supply of skilled workers now affecting aviation across all operational areas, FLS Training Officer Nicole Barrette-Sabourin said there is a long list of people who need training now and the looming question for ICAO and the industry is: how?

“From technicians and engineers to pilots and air traffic controllers, there is a significant need for training and ICAO is currently looking at solutions for these safety-critical positions. The approach will be competency-based. Rather than simply determining the Standards and Recommended Practices (SARPS) and including what needs to be known in the guidance materials, ICAO will set requirements for aviation personnel to demonstrate a firm command of their job skills. To do this, ICAO must identify the key competencies that need to be achieved for all the different positions. To set a standard for each discipline, the goal is to collect, document and maintain competency frameworks for the various positions. From these frameworks it is hoped that training programmes, based on the understanding of each position, will be developed and implemented.”

The idea is for service providers and airlines to be given the building blocks to carry this out, but the onus will still be on them to develop and implement these programmes and measure associated competencies. The States would then be given the tools to self assess whether trained personnel are meeting the required competency levels. Competency-based licensing assessment was first initiated with the multi-crew pilot licence (MPL) —an alternative method of training pilots. Contrary to the traditional pilot licensing requirements, which are based on inventory and hours logged, the MPL training scheme is focused on the need to develop competencies that were identified by analysing the tasks performed by a crew operating a modern multi-crew transport aeroplane in all phases of flight. In accordance with modern instructional system design, these competency units were broken down into elements that were further divided into performance criteria or statements of observable behaviour, each corresponding to a training objective. From this, course developers are able to establish an effective curriculum by defining the ultimate training objectives and mastery tests and then highlighting the training modules and devices required to develop these skills. With the competency-based approach having proven successful, ICAO is looking to expand its application to other areas.

“It’s a paradigm shift,” said Barrette-Sabourin. “It’s a gradual change and it will take time to introduce because people are used to being trained and educated based on older models.”

Training methodologies will also be examined as ICAO looks for more implementation of Standards and guidance materials. With a wealth of information in the coffers ready to be transferred throughout multiple levels, a significant challenge lies ahead in disseminating all that information and overseeing its use. Training the trainers, Mitchell Fox observed, is one of the more effective means of transferring that information.

“National regulations on what an airline pilot licence holder should be capable of doing are very important,” Fox explained, “but if these aren’t phrased in a measurable, competency-based fashion, examiners, State by State, will be interpreting the Standards in a multitude of ways. With 190 ICAO Contracting States, the overall objective is to avoid the potential confusion and mass misinterpretation that grows from individual States not being given the proper tools to understand the regulations and guidance material.”

Global Aviation Safety Plan

Developed with the Industry Safety Strategy Group (ISSG), the ICAO Global Aviation Safety Plan (GASP) is becoming increasingly important. The plan recognizes safety as a shared responsibility between industry and regulators and seeks to strengthen their capabilities across the board. Describing the programme’s expansion into other aspects of the industry as a necessary strategy, Fox said there will be a shift to align other work programmes with these newer global safety initiatives.

Though garnering the support and resources needed to strengthen sectors of the aviation industry by implementing potentially costly measures is not an easy process, Fox explains, it is vital nonetheless.

“It’s a difficult discussion right now because, with the costs of fuel as high as they are, the airline industry is going through a very tough time,” Fox said. “When the industry is losing money, it is sometimes hard to focus on a target five or 10 years down the line. Those of us who have been in this industry know that there are cyclic ups and downs and that to improve safety you always have to be focused on the long term. In my view, aviation remains a vibrant, robust industry that has recovered many, many times from similar situations—and it will recover again. From a safety aspect, ICAO needs to remain focused on the future.” ■

AIG Divisional Meeting

Rare gathering of investigative experts spotlights incident prioritization, Unmanned Aircraft System (UAS) concerns and reinforcing the primacy of prevention as the sole objective of investigations



Always a tremendous catalyst for the discovery of safety related information that has paved the way to aviation's progress, Accident Investigations and some of the specific Annex 13 provisions that trigger and

provide for them are being put under review this fall as the world's most important Accident Investigation and Prevention event brings together accident and incident investigators from all corners of the world. Marcus Costa, Chief of ICAO's Accident Investigation and Prevention (AIG) Section, spoke to the *Journal* recently about some of the key matters up for discussion in this first meeting of its kind since 1999.

Following an extensive two-year consultative process to develop and finalize the significant agenda items forming the basis of their discussions, aviation Accident Investigation and Prevention specialists from all 190 ICAO Member States as well as concerned international organizations have been invited to come to ICAO HQ in October for the first meeting of its kind in almost a decade.

High on the list of the many topics up for discussion by the assembled experts will be: how future accidents and incidents might be categorized and prioritized to better target the significant budgetary allocations required to conduct them; the types of amendments to Annex 13 that will be required to accommodate the increasing prevalence of UAS and very light jet aircraft movements; and reinforcing the fundamental concept that the primary purpose of aircraft accident and incident investigations is to uncover data to assist in future prevention of similar occurrences, rather than forming the basis to establish responsibility and allocate blame.



"Divisional Meetings of this type are held very infrequently and are probably only second in importance to the ICAO Assembly itself," begins Marcus Costa. Costa is Chief of the ICAO Accident Investigation and Prevention (AIG) Section and his excitement and enthusiasm for his Section's field of activity is palpable as we begin our discussion.

"States have provided us with a tremendous amount of input and objectives in the build up to this event and one of the clear priorities that we have determined is the need for greater regional cooperation in investigative activities," Costa continued. "What we're hearing from Members is that the significant budgets required to conduct full-scale investigations may be prohibitive for certain States acting individually. Delegates are hoping to address this concern through the development of improved regional cooperation mechanisms but also through the assignment of degrees of priority to accident types—defining for instance those that would trigger a full response and those that could be adequately attended to by a limited assessment team.

"As with all of our activities, prevention of recurrences remains the guiding priority in this case and so the categorization hierarchies under discussion will likely reflect the differences between accidents involving causes and effects that have been previously documented vs. those that seem more likely to reveal new lessons for aviation safety specialists to respond to," Costa remarked. Given that a full-scale investigation of a larger commercial jet accident can sometimes engender budgets upward of US\$100 million,

the establishment of these cooperative programmes and the need for a higher degree of classification and prioritization is very clear. The meeting will therefore consider how States could best allocate their resources in light of the existing provision to investigate all accidents, while also considering the need to investigate more serious incidents.

As the world's skies continue to see an increased prevalence of Unmanned Aircraft Systems (UASs—see a related story submission from the IAOPA in *Journal* Issue 04, 2008) and new Very Light Jet (VLJ) aircraft, Costa noted that another important area of discussion for he and his colleagues will be to amend the definition of accident so as to include UASs and associated categories, as well as amending aircraft weight classes for occurrence reporting under Annex 13. To date, ICAO receives data reports only of occurrences to aircraft of a maximum mass limit over 2,250 kg. Consideration will therefore be given by the meeting to lower the maximum mass limit or to amend the related provision so that the Organization could also begin receiving accident reports of VLJs with a maximum mass limit equal to or below 2,250 kg.

Among the many other important areas of discussion that will be explored during the Divisional Meeting, one of the more fundamental will be the reaffirmation of AIG activities in all regions of the world as safety-related activities intended to assist with the prevention of future accidents, thereby helping States avoid loss of lives and valuable resources. In this connection, Costa emphatically noted that the backbone of Annex 13 lies in its paragraph 3.1 that reads: *“The sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability.”*

SMS concepts expressly link the success of any safety related inves-

tigation or process with a culture of non-penalization for States or individuals involved in incident reporting. It is understood that overall safety concerns must trump tendencies toward blame and punishment in order to foster a culture of openness and participation—leading to more safety data reporting and therefore more effective safety solutions—rather than a culture of recrimination, secrecy and fear that would simply perpetuate safety risks.

“Accident investigations are, by definition, reactive in nature, but the reality remains that many stakeholders still operate from a mindset whereby they will only initiate the type of comprehensive investigation that's required to truly get to the root of a

safety issue once a serious event has occurred,” Costa said. “Annex 13, especially with the amendments being considered this Fall, provides us with the basis and the tools we require to conduct these investigations thoroughly and fairly, but the results we achieve absolutely must remain primarily tools for the processes of prevention—not evidence for those who would seek to assign blame. This cultural awareness runs to the heart of all safety activities, whether they be reactive, proactive or predictive in nature.”

For a more comprehensive review of the substance and results of the AIG 2008 Divisional Meeting, please look for this topic to be presented again in *Journal* Issue 01, 2009. ■

ACCIDENT INVESTIGATION AND PREVENTION (AIG) DIVISIONAL MEETING (2008):

MAIN AGENDA ITEMS

SUBJECT 1: Annex 13

- Subject 1.1: Chapter 1 of Annex 13
- Subject 1.2: Chapter 5 of Annex 13
 - Investigation of accidents and serious incidents
 - Independence of the investigation
 - Use of information from flight data recorder (FDR)
 - Participation of States in investigations
- Subject 1.3: Chapter 7 of Annex 13
- Subject 1.4: Format of the Final Report in Annex 13
- Subject 1.5: Notification of accidents and serious incidents
- Subject 1.6: Final Report
 - Safety recommendations
 - Action on safety recommendations
 - Release of Final Reports
- Subject 1.7: Attachment E to Annex 13

SUBJECT 2: Recent developments in investigation and prevention matters

SUBJECT 3: Cooperation among states in investigations

SUBJECT 4: Management of safety data and representation

SUBJECT 5: Conduct of the investigation

SUBJECT 6: Regional cooperation in accident and incident investigations

SUBJECT 7: Resolving deficiencies identified during ICAO audits

Winds of change in aviation medicine



In its continuing effort to adapt to a changing industry and the constantly evolving world of medical science, Dr. Anthony Evans reports that ICAO is taking new strides toward modernizing the guidelines for aviation authorities

focusing on issues such as a pilot's age and annual medical exams, insulin-treated diabetes, HIV, as well as providing new advice on mental health issues and the use of antidepressants.

Dr. Anthony Evans is Chief of the ICAO Aviation Medicine Section (MED). The extensive spectrum of MED's ongoing duties include monitoring developments in the field of medicine and aviation medicine while adjusting Annex 1 provisions as necessary, reviewing and maintaining current ICAO literature such as the Manual of Civil Aviation Medicine, and providing guidance to licensing authorities in Contracting States on medical standards.

Subjects such as mental health and the use of antidepressants remain controversial topics in the field of aviation medicine. While examiners have long tested for obvious physical conditions to ensure pilots don't fall ill mid-flight, other potentially problematic circumstances concerning mental health and behavioural aspects related to health are often under-discussed and may be overlooked. Concentrating on the detection of physical



illness in pilots is increasingly being questioned in consideration of the fact that sudden, unexpected incapacitation from physical illness has not been responsible for a fatal aviation accident involving a large airliner in more than 30 years.

"The last known fatal accident involving a large airliner that implicated physical incapacitation as a contributory cause was a heart attack back in 1972," Evans began, "and yet the current medical examination still focuses primarily on the physical exam and doesn't look at the mental health aspects in any detail. We have seen evidence, however, of professional pilots abusing alcohol or drugs and have concerns about possible suicidal tendencies involved in fatal accidents. However, we still firmly concentrate on detection of physical disease in the medical assessment."

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Evans noted that a letter was sent out this past May informing Member States and selected international organizations that the Air Navigation Commission, at the seventh meeting of its 176th Session held on November 20, 2007, had considered proposals developed by the Secretariat, with the assistance of the Medical Provisions Study Group (MPSG), to amend the Standards and Recommended Practices (SARPs) in Annex 1—*Personnel Licensing* relating to medical provisions, and also to Annex 6—*Operation of Aircraft, Part I—International Commercial Air Transport—Aeroplanes* relating to medical supplies.

The amendment proposals to Annex 1 introduce some new concepts in the field of aviation medicine to better address current aeromedical risks to flight safety. It's a letter that, Evans said, "brings a number of areas up to date while putting forward some important new philosophical points regarding where we're placing our emphasis during routine examinations."

Age related issues: a change in pilot examination focus

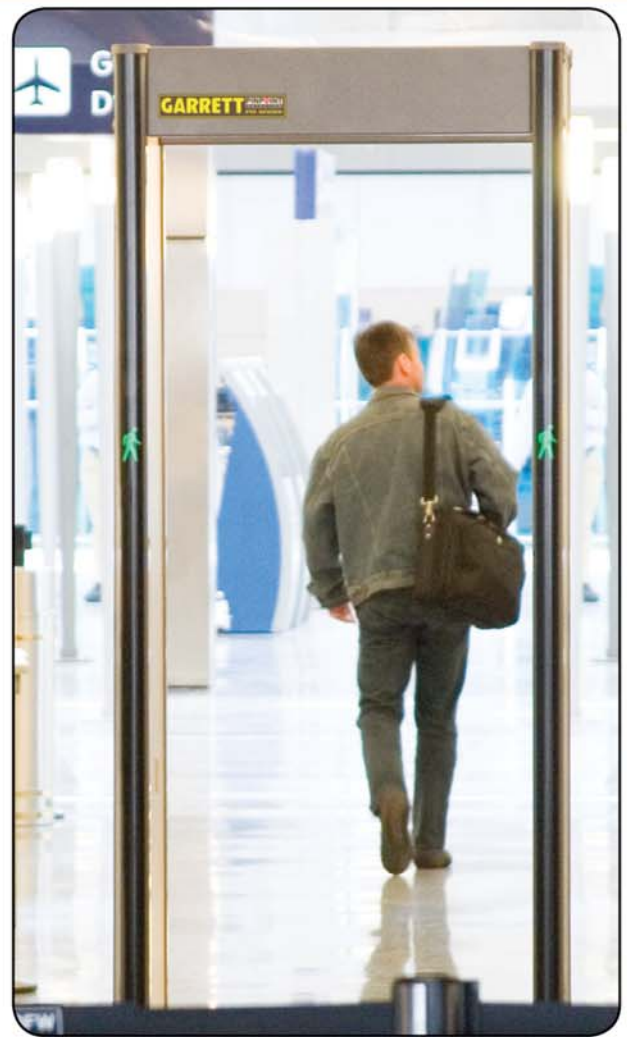
One of these philosophical points concerns the ongoing discussions regarding age and annual medical examinations. Evans said that most professional pilots, regardless of age, are examined once a year as a routine under current provision. Presently, these examinations check for obvious physical complications—such as the potential for cardiovascular disease as discussed above. Those pilots who fly passenger flights solo, or who are between 60 and 65 (65 being the maximum age for a professional pilot), are routinely examined twice a year or possibly more if they have a specific medical problem.

Given the very low risk of younger pilots suffering a mid-flight heart attack, Evans said the letter suggests a more integrated approach to medical examinations by proposing that examiners look for the other, less-obvious triggers that adversely affect pilot performance—such as depression or alcohol abuse.

"In my view, there is a lack of credible evidence to support physical disease as a major problem in younger pilots, and age-related illnesses are adequately addressed in the older pilots," Evans said. "While no one is suggesting that we ignore the possibility of physical incapacitation in pilots, the real challenge at hand is how to strike the right balance between mental, behavioural and physical issues in the routine medical examination."

Proposals surrounding mental health issues

Encouraged by work undertaken by the Aerospace Medical Association (AsMA), an ICAO Medical Provisions Study Group was recently formed to review some of the current standards and recommended practices of aviation medicine, Evans explained. That MPSG agreed with the AsMA's assessment that instances of physical disease were relatively low in pilots under 40



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and it recommended that more emphasis be placed on mental health aspects in such pilots.

The proposal allows the regulating authority to, at their discretion, omit certain components of the physical examination in the under-40 pilot, while giving the designated examiner more time to privately talk with the pilot. The discussions, with the exception of extreme cases, would remain confidential. The main objective would be to uncover less obvious issues while providing an opportunity for counselling. The idea is not to try and detect previously undiscovered serious illness, but to bring out aspects of the pilot's life that would otherwise be unknown to the examiner and which, while not creating an immediate flight safety risk, could do so in the future if not addressed. While advice and basic counselling could remain 'off the books,' Evans noted, any treatment or high-risk situations would still need to be reported and dealt with more formally. By keeping most conversations and advice unrecorded, pilots would be given a more comfortable environment in which they could seek help and potentially rectify their lifestyle before any problem spirals out of control.

"The controversial path that we've taken is to propose that the discussion the examiner has with the pilot should not be considered part of the typical, recorded, medical assessment," Evans said. "The idea here is that if the pilot does have some lifestyle problems, drinking too much for example, the examiner would be able to provide private advice in a confidential and comfortable setting that will hopefully prevent a potentially serious problem later on."

Though examiners may be experts at finding physical problems or at offering advice on healthy living, Evans said doctors will need some guidance when approaching mental health concerns. ICAO, he said, provides those guidelines in the form of possible

questions the examiner could ask. They are questions, he said, which have been proven to be useful tools in detecting and preventing problems in the general population and it is believed that, when applied to pilots, they will be just as effective.

New guidelines on the use of antidepressants

Another hot topic, Evans said, is the use of antidepressants among pilots—something that has long been deemed unacceptable. At the moment, most regulating authorities do not allow pilots to fly when they are clinically depressed or using antidepressants.

Pilots who are told they cannot work if they are suffering from an admitted depression, treated or not, might be tempted to withhold information concerning their use of medication or they might not admit to their mental health issues at all. While some do seek treatment and take the necessary steps to restore their health and fly again, others may go untreated and fly depressed or conceal the use of antidepressants from the regulating authorities in order to stay under the radar and continue to work. Data on this topic is understandably sparse, but there is sufficient information from pilot representative organizations and post mortem toxicology of pilots involved in accidents to engender some concern.

Currently, the general opinion among aviation authorities is that the use of antidepressants needs to be investigated and discussed, according to Evans, and ICAO's stance, as noted in the letter, suggests States be allowed to permit the use of certain antidepressants among pilots—who must be under close medical supervision. Citing improved medications with less negative side effects and advancements in the treatment of depression, Evans said there are at least three drugs on the market that are potentially permissible. He emphasized that many drugs used

to treat depression today have far fewer potentially dangerous side effects, such as drowsiness.

Limiting the spread of communicable diseases

Turning to a different subject and referring to an article in the Convention that requires governments to reduce the risk of spreading communicable diseases by air, Evans said that most efforts toward preparing for a potential pandemic had concentrated on those aspects relating to disease surveillance and provision of health care. He is looking to increase efforts with respect to planning in the aviation sector.

Evans said ICAO could work effectively with World Health Organization (WHO) to ensure a joint approach involving both the aviation and public health sectors. While public health authorities have tended to target a variety of issues—from vaccinations to hospital services—the MED remit has traditionally concentrated on the health of flight crews and air traffic controllers. Given this, Evans said he is looking to fill the gaps between public health authorities and the aviation industry while designing guidelines that focus on communicable diseases.

With this in mind, ICAO MED is hosting a team meeting in Bangkok this coming September that is going to bring together three United Nations agencies, Evans said, and the meeting has garnered a lot of interest. Working with UN agencies like the Office for the Coordination of Humanitarian Affairs (OCHA) and the WHO, the goal is to improve preparedness planning in aviation.

Although only a one day event, Evans has high hopes that the level of interest and enthusiasm being shown by international medical leaders is a sign that the meeting will provide a strong push toward the development of new cross-sector approaches to this serious global health concern. ■



Progress continues with Level 4 implementation: 134 of 190 ICAO Member States now either compliant or with plans in place

By Nicole Barrette-Sabourin, Technical Officer, Flight Safety Section

As of March 5, 2008, States not yet compliant with ICAO Level 4 English language proficiency requirements were required to have published their implementation plans on the ICAO Flight Safety Exchange (FSIX). ICAO requires that these plans describe the steps being undertaken to achieve compliance with the language proficiency requirement in time for the March 2011 deadline, and that they note any interim measures in place to mitigate risk, as required, for pilots, air traffic controllers and aeronautical station operators involved in international operations.

In March 2003, new language provisions were formally adopted which became applicable on March 5, 2008. Related Annexes to the Chicago Convention were modified accordingly, including Annex 10—*Aeronautical Telecommunications*, where the use of the English language is specified. Annex 10 now states that “the air-ground radio-telephony communications shall be conducted in the

language normally used by the station on the ground or in the English language” and that “the English language shall be available, on request from any aircraft station, at all stations on the ground serving designated airports and routes used by international air services.”

Annex 1—*Personnel Licensing*, stipulates that the language proficiency requirements apply to pilots, air traffic controllers and aeronautical station operators involved in international operations. It notes that they should be able to demonstrate the ability to speak and understand the language used in radio-telephony (RT) communication to the ICAO Operational Level 4.

Recognizing that some States would not be able to meet the applicability date, the 36th Session of the ICAO Assembly urged Members States to accept non-compliant pilots from other States into their airspace until March 5, 2011, *provided* that the States that issued or rendered valid the non-compliant licenses had posted their language proficiency implementation plans on the ICAO FSIX (www.icao.int/fsix/lp.cfm).

In addition, the Assembly also urged Member States not to restrict operators conducting commercial or general aviation operations in the respective State’s territories from entering

REGIONAL WORKSHOPS ON THE DEVELOPMENT OF IMPLEMENTATION PLANS FOR LEVEL 4 LANGUAGE PROFICIENCY REQUIREMENTS



The ICAO Regional Workshop on the development of implementation plans for language proficiency requirements—ICAO Asia Pacific Region—was held at the Asia and Pacific Office, Bangkok, from January 29 to 31, 2008. ICAO has conducted eight workshops between December 2007 and early March 2008, in which a total of 488 participants from 102 States took part.

Participants to the Bangkok Language Proficiency Workshop with course instructors, Paul Lamy (middle) and Fareed Shah (fifth from right). In all, 85 participants took part in the event

the airspace of other Member States where air traffic controllers or radio station operators had not yet met the new language proficiency requirements. This condition was also tied to the March 2011 deadline, with similar requirements that the non-compliant States had to have posted their language proficiency implementation plans to the ICAO FSIX.

The implementation plans in question are required to describe the steps being undertaken to achieve compliance with the language proficiency requirement by March 2011, as well as noting any interim measures in place to mitigate risk, as required, for pilots, air traffic controllers and aeronautical station operators involved in international operations.

To date, out of ICAO's 190 Member States, 45 have indicated that they are compliant with the new language proficiency requirements while 89 have

filed an implementation plan in full or in part. Clearly, much work remains to be done in order to achieve full compliance by March 2011.

ICAO began facilitating the implementation process well before the applicability date, including eight workshops conducted from December 2007 until early March 2008, in which 488 participants from 102 States took part.

ICAO has also developed guidance material to support the implementation process, including the *Manual on the Implementation of Language Proficiency Requirements* (Doc 9835) and a CD containing speech samples of level 3, 4 and 5 speakers, as well as a detailed rating for each. The FSIX Implementation of language proficiency requirements page on the Organization's website (www.icao.int/fsix/lp.cfm) provides guidelines on the development of implementation plans and contains sample plans submitted by States. The

Frequently Asked Questions under the Flight Safety Section—Personnel Licensing, contains a full explanation of the requirements and related issues.

An ICAO circular on globally-harmonized testing criteria will be published shortly. Its objective is to provide licensing authorities, operators and air navigation service providers with tools to develop and/or assess language testing services. The second edition of Doc 9835 is also planned to integrate updated information.

In addition, a number of symposia, regional seminars and workshops were held from 2004 to 2007 to sensitize States and interested stakeholders to the new requirements and to assist in the application of the provisions. Still more activities are planned to help all stakeholders cooperate in meeting the 2011 deadline. ■

THE MEXICAN EXAMPLE OF LEVEL 4 COMPLIANCE PREPAREDNESS

The Mexican experience with Level 4 compliance has been a great success thus far as the State continues on schedule with its educational and testing programmes in order to meet ICAO's extended 2011 language proficiency deadline. As required, Mexico submitted its plan to ICAO before the March 2008 deadline for States whose compliance efforts were still ongoing. It expects to fulfill 100 percent of its Level 4 proficiency requirements before the end of 2009.

To develop a valid and reliable exam to test the capacity to use English in aeronautic communication, Mexican authorities have approved four evaluation tools—one of these ensuring that competence is tested directly in situations that replicated authentic communication as closely as possible, rather than indirectly through discrete exams. Furthermore, assessment by Mexican examiners or observers reflects the capacity of examinees to use their language resources in combination—expressed in terms that correspond to ICAO's holistic descriptors and rating scale.

The Mexican tool produces a set of specifications to be met by flight simulation scenarios (test situations) and includes an observation procedure that guides the examiner in verifying the communication produced by the examinee. In addition, the Mexican solution is practical and cost-efficient, meaning examiners are able to evaluate examinees essentially while they observe them (real-time conditions), and that English testers were also able to start evaluating examinees after a simple introduction and a brief practice period (minimum-training conditions).



A simulation scenario was developed on the basis of previous research regarding documented accidents, for example Avianca 052, and with ICAO's requirements in mind. The scenario was implemented via an adaptable script, a series of physical setting specifications and computer displayed flight trajectories and parameters.

Twenty (volunteer) pilot/controller communications that took place in the context of that scenario were recorded. The communications were transcribed and each pilot's communicative competence was determined (based on ICAO's rating scale). In parallel, the structure of an analytic matrix was developed that recovered important distinctions from the communicative approach to language teaching and integrated relevant contributions from various schools of linguistics. The transcriptions were analysed and the matrix slots were filled-in. The key features of aeronautical language use were identified and a flowchart for efficient assessment observations was produced on the basis of the identified features.

Enhancing aviation safety in Africa

AFI Plan progress continues on pace



To give effect to ICAO's Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan), the AFI Comprehensive Implementation Programme (ACIP) Steering Committee has been coordinating

internally within the various ICAO Bureaux and Offices (including the Regional Offices) and externally with all AFI stakeholders, partner States and organizations, in order to establish three key areas of English and French language consultations and activities during the remainder of 2008 and through 2009. Haile Belai, ICAO Chief, AFI Comprehensive Implementation Programme, provided the *Journal* with an update on these near-term programmes and objectives in the context of ICAO's broader safety aspirations for the AFI Region.

The Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan) was developed to address the concerns expressed by the ICAO Council on the safety status of aircraft operations in the AFI Region. The Council recognized that the problems facing the States in the AFI Region and other States around the world are similar in nature. The Council was also aware, however, that the acute economic and political issues influencing the situation in the AFI Region posed a complex challenge that truly demanded a new approach. ICAO therefore developed the AFI Plan to address aviation safety concerns and support African States to meet their international obligations for safety oversight.

The AFI Plan was presented to a high-level conference that was convened in Montreal on September 17, 2007. The conference endorsed the AFI Plan, which was subsequently

presented to the 36th Session of the ICAO Assembly (September 18–28, 2007). The Assembly tasked both the Council and the Secretary General to implement the AFI Plan within the shortest possible period. The Assembly's AFI Plan Resolution, A36-1, also emphasized a heightened leadership role and accountability by ICAO for the Plan's effective implementation, supported by strong programme management and coordination activities.

Thus, under ICAO's leadership, the AFI Plan calls for collaboration between regulatory agencies and industry in the implementation of initiatives aimed at rectifying safety deficiencies. To this end, specific objectives have been developed requiring ICAO to:

- a) Increase compliance with ICAO SARPs and industry best practices.
- b) Increase the number of qualified personnel at the industry and oversight levels.
- c) Improve the quality of inspectors and other civil aviation staff through training.
- d) Ensure impartial and unimpeachable investigation and reporting of serious accidents and incidents.
- e) Enhance regional cooperation.
- f) Enhance capacity of regional and sub-regional safety oversight systems.
- g) Improve assistance in oversight to least developed States.
- h) Provide expert aviation knowledge within the reach of the targeted States via the web.

To give effect to these and other similar objectives, the Secretary General established the AFI Comprehensive Implementation Programme (ACIP) and nominated the members of the ACIP Steering Committee (ACIP-SC) to oversee the work of ACIP. The ACIP SC held its first meeting in February 2008 and approved the work programme of ACIP that was endorsed by the Council during its 183rd Session. Thus, ACIP was tasked to ensure proper coordination both internally within the various ICAO Bureaux and Offices (including the Regional Offices) and externally with all stakeholders, partner States and organizations. It was also responsible for coordinating and facilitating the performance of a comprehensive gap analysis as a first step towards implementing the objectives of the AFI Plan.

To meet its assigned tasks and effectively implement the AFI Plan, ACIP management identified three focus areas upon which its activities and work plan have been developed. These are:

1. Enabling States to establish and maintain a sustainable safety oversight system.

Under this focus area, ACIP cooperates and coordinates with all stakeholders in order to assist States to build the capability for an effective and sustainable safety oversight system, nationally or at the Regional level. Taking into consideration the existing

capability of most of the African States, ACIP and stakeholders clearly support the establishment of Regional Safety Oversight Organizations on the basis of existing platforms and cooperative agencies. To this end, ACIP has closely cooperated with the Industry Safety Strategy Group (ISSG) to conduct Global Aviation Safety Roadmap seminars and workshops. The GASR workshops lead to gap-analyses covering all players and stakeholders in the aviation system in a State, with the aim of

A SAFETY IMPLEMENTATION PLAN FOR AFRICA: THE ACIP WORK PLAN

Global Aviation Safety Roadmap (GASR) workshops conducted and planned in cooperation with the Industry Safety Strategy Group (ISSG) and the host States:

- Abuja, Nigeria (English) – April 14 to 16, 2008.
- Arusha, Tanzania (English) August 12 to 14, 2008.
- Ouagadougou, Burkina Faso (French) November 11 to 13, 2008.
- Lusaka, Zambia (English) December 2 to 4, 2008.

Gap-analysis conducted or planned:

- Banjul Accord Group (BAG) States following the Abuja GASR workshop (June 16 to July 25, 2008).
- East Africa Community (ECA) and neighbouring States following the Arusha GASR workshop (October/November 2008).
- Economic and Monetary Union of Western African (UEMOA) following the Ouagadougou GASR workshop (February/March 2009).
- Southern African Development Community (SADC) States, following the Lusaka workshop (February/March 2009).

Seminars, workshops and courses:

- A one-day seminar (English) focused at high-level decision makers (civil aviation authorities and the African aviation industry (airlines, airports, air traffic management, etc.).
- A three-day seminar/workshop on State Safety Programme (SSP) focused at regulators.
- Safety Management System (SMS) course directed at Safety Officers from industry and civil aviation authorities including safety teams from regional organizations.

The above three seminar/workshops and course are designed to be offered as one package as follows:

- Addis Ababa, Ethiopia (English), September 29 to October 3, 2008.
- Ouagadougou, Burkina Faso (French), February 2009.
- Two additional packages in English and French to be delivered in 2009 (venue and period to be determined).

Additional seminars and workshops planned for 2009 in coordination with the Air Navigation Bureau (ANB) and the Regional Offices (venue and period to be determined later):

- Licensing, Flight operations and cabin safety.
- Aircraft certification and airworthiness.
- Air traffic management and ground operations.
- Accident prevention and investigation.
- Transport of dangerous goods by air.
- Aviation medicine.

The above seminar/workshops will be delivered in English and French.

addressing the challenges faced by States and recommending viable and sustainable solutions.

The first GASR workshop was held in Abuja, Nigeria last March and the second in Arusha, Tanzania, in August 2008. A French version of the workshop is planned for Ouagadougou, Burkina Faso, in November 2008, and one for the SADC States is scheduled for December 2008. The first series of gap-analysis of the seven Banjul Accord Group member States has been completed and the information gathered is now being tabulated, with the aim of developing recommendations leading to a sustainable solution to enable States to acquire the capability for safety oversight at the national or regional level.

2. Assisting States to resolve identified deficiencies in the shortest possible time.

In this focus area, ACIP is charged to promote and encourage Regional cooperation based on existing Regional platforms, such as the COSCAPs (*editor's note: see COSCAPs overview on page 30*), to assist States within their respective Regions to resolve identified deficiencies. This is a short-term solution because the ultimate goal is to enable States to develop and maintain an effective safety oversight system, either nationally or at a Regional level. ACIP is also charged to promote and facilitate cooperation among existing Regional aviation training centers and take advantage of the centers for capacity building activities directed at resolving identified deficiencies. In this regard, ACIP and TCB, in cooperation with AFCAC and ASECNA, intend to hold a Conference of all aviation training institutes in the continent with the aim of developing a programme to enhance standardization and quality control among aviation training centers in Africa.

3. Assist aviation service providers in Africa to enhance the development of a safety culture among their employees and in conducting their business.



This is an area where ICAO is closely working with the aviation industry to enhance the overall safety of aircraft operations.

To this end, ACIP is currently developing guidance material for States to assist them in the creation and maintenance of a State Safety Programme (SSP) that will also include a requirement for the industry to develop Safety Management Systems (SMS). A SSP seminar/workshop and SMS training course will be conducted in both English and French during the third and fourth quarters of 2008 respectively. Accordingly, the first session, to be delivered in English, is scheduled to be held in Addis Ababa, Ethiopia, from September 23 to October 3, 2008. The whole Session contains three separate, although related activities and includes:

- A one-day seminar focused at high-level decision makers from civil aviation authorities and the African aviation industry (airlines, airports, air traffic management, etc.) will be held on Tuesday, September 23, 2008. The seminar will focus on high-level management duties and responsibilities relating to safety management systems and emphasize safety as a business activity effectively supporting the bottom line of the industry and its ability to compete globally.
- A three-day seminar/workshop on State Safety Programmes focused at regulators will be conducted from Wednesday September 24 to Friday September 26, 2008. To my knowledge, this will be the first time that such a seminar/workshop will be

delivered by ICAO. This is expected to enable States to regulate, certify and monitor the establishment and implementation of Safety Management Systems by the aviation industry.

- The standard ICAO Safety Management Systems course will be provided to safety officers from industry and civil aviation authorities including safety teams from Regional organizations over a period of five days, from September 29 to October 3, 2008. The successful completion of the SMS training course should enable the African aviation industry to establish and maintain effective Safety Management Systems throughout its operations.

A similar programme in French is also scheduled for February 2009 in Ouagadougou. In addition, ACIP plans to conduct eight seminars and workshops in both French and English in 2009, in order to address a variety of subjects such as aircraft operations, airworthiness of aircraft, air traffic safety, aerodrome and ground operations safety and accident investigation and prevention.

In summary, the effective implementation of ACIP is expected to bear fruit in a reasonably short period. However, for the programme to deliver, it is absolutely essential that all stakeholders and specifically the African States commit to the effective implementation of the AFI Plan and coordinate and cooperate with ACIP. ■

Safety through cooperation

Asian COSCAPs provide significant benefits to Regional safety programmes and oversight

ICAO has worked with Member States and other Regional stakeholders in recent years to establish Regional Cooperative (COSCAP) programmes to assist participating States in strengthening their safety oversight systems. Wolfgang Sander-Fischer, ICAO TCB Chief, Asia/Pacific Programme, discusses the origins and broad objectives of the COSCAPs in his Region and some of the successes that have been achieved thus far.

As the outputs from the ICAO Universal Safety Oversight Audit Programme (USOAP) have demonstrated, many States find it difficult to meet their safety oversight obligations adequately. A solution to this problem, which is proving successful in Asia and in other regions of the world, is the establishment of Regional Cooperative (COSCAP) Programmes to assist participating States in strengthening their safety oversight systems.

The origin for this innovative programme to improve aviation safety in the Asia/Pacific Regions can be traced to 1994, when a conference of the Region's Directors General of Civil Aviation (DGCAs) highlighted the need for greater attention to safety. This was soon followed up by a Regional seminar on aviation safety that recognized the need to pursue Regional cooperative arrangements. ICAO consequently developed a model programme entitled the Cooperative Development of Operational Safety and Continuing Airworthiness Programme, or COSCAP.

The draft programme, presented to DGCAs of the Asia/Pacific Regions in August 1995, proposed cooperative agreements between defined groups of countries. With the aim of enhancing the safety and efficiency of air transport operations by establishing regional safety oversight services, the programme received the overwhelming support of the States.

To date, three COSCAP programmes have been established in the Region. The first, in South Asia, commenced operation in February 1998. This was followed by South East Asia in July 2001, while the third programme—for North Asia—

commenced operation in January 2003. ICAO has also established COSCAP programmes in other Regions.

Programme features

COSCAP programmes, established through agreement between Member States (with execution by ICAO through a Trust Fund), provide a dedicated forum for promoting continuing dialogue, coordination and cooperation in matters related to flight safety among the more developed, and less developed participating civil aviation administrations. This creates an environment for harmonization and advancement in safety oversight policies, laws, regulations and procedures.

COSCAPs also provide an efficient and cost-effective means for training large numbers of safety oversight personnel and enable Member States to be effective in promoting accident prevention through the establishment of Regional Aviation Safety Teams (RAST) and by building mutual understanding and cooperation in the sharing of scarce resources.

COSCAPs are implemented by ICAO through its Technical Cooperation Programme, under the direction of the respective Steering Committees. These Committees are comprised of the DGCAs/Heads of the civil aviation administrations of the Member States, representatives of the ICAO Technical Cooperation Bureau, the ICAO Regional Director, and the Programme's Chief Technical Adviser or Programme Coordinator. Representatives of the donor community and other organizations participating in the Programme also attend Steering Committee Meetings. The COSCAPs are funded mainly by the Member States themselves, with additional contributions from external donors.

While the COSCAP programmes contain common objectives and work elements, the priorities assigned to these elements will vary depending on the priorities of the CAAs of participating Member States and the number of years that the programme has been in existence. Generally, early on in the programme, the focus is more on providing training to personnel in both the regulatory bodies and industry of the Member States, including the development of guidance materials. This role shifts gradually toward certification and inspection (surveillance) activities, including on the job training, as the programme matures.

A major COSCAP programme objective is for the harmonization of rules, regulations and procedures for safety oversight, supported primarily through the development of guidance material for inspectors. Some harmonized regulatory material has also been developed for adoption by the participating States, with little or no change.

Regionally recruited inspectors in the disciplines of flight operations, airworthiness, air traffic management, personnel licensing and aerodromes serve in COSCAP-SA. National inspectors have also been trained by the internationally recruited programme experts across the entire range of safety oversight duties. On request, COSCAPs assist States in preparing for and/or addressing specific findings of ICAO Universal Safety Oversight Audit Programme (USOAP) reports.

The COSCAPs have established Regional Aviation Safety Teams to recommend accident prevention interventions to the Steering Committees. Recommendations approved by the Steering Committees are implemented through the coordinated efforts of the regulatory authorities in cooperation with the donor community, including service providers, airlines and aircraft manufacturers.

With additional COSCAP programmes being established, and the expansion and institutionalization of existing COSCAPs, the coordination of outputs from the various programmes is very important, as scarce resources do not permit for the duplication of efforts. The three Asian Programme Coordinators are in regular contact and they collaborate with ICAO's Regional Office and Headquarters to ensure that activities are pre-coordinated and conducted simultaneously for all three Asian COSCAPs whenever possible and practicable.

In 2007, ICAO extensively modified the Global Aviation Safety Programme (GASP) and all three Asian COSCAPs

have been directed by their respective Steering Committees and are actively integrating the GASP safety initiatives into their work programmes.

COSCAP benefits

The COSCAPs established to date in Asia have proven to be an efficient and cost-effective means of providing expert support, which is very important in consideration of the scarcity and consequential high cost of mobilizing international expertise, especially for some States that do not require the experts on a full-time basis. COSCAP experts who have been serving in the Region are very familiar with the Regional issues and therefore can respond quickly to urgent requests in a more consistent and effective manner. This has helped in the Regional harmonization of rules and procedures. The availability of this expertise was clearly appreciated when Member States were preparing for USOAP audits and later addressing the audit findings. In turn, ICAO's USOAP has recognized the effectiveness of the COSCAP Programmes in Asia in the reduction of deficiencies identified through the USOAP process.

The benefit of providing considerable training on specialized subjects at relatively low cost to such a large number of participants has been a significant achievement of COSCAP, which again contributed to harmonization of safety oversight in the Region.

The international donor community, with an interest in promoting flight safety globally, has demonstrated strong support for the COSCAPs, both in cash and in kind, as the donors recognize the merit, viability, efficiency, cost effectiveness and practicality of the programmes.

COSCAP future

As per Assembly Resolution A36-2, ICAO is assisting the COSCAP programmes in becoming self-sufficient institutions that can offer their Member States a larger range of safety oversight assistance where this is required. To this end, multi-lateral Memoranda of Understanding are being instituted among the Member States and Institutional Frameworks adopted with the aim of permitting COSCAPs to become regional safety oversight organizations wherever this may be so desired by their Member States. ■





Aviation Security Panel 19th meeting

The 19th meeting of the Aviation Security (AVSEC) Panel was held in Montreal from May 26 to 30, 2008, and was attended by 62 members/advisors and 43 observers nominated by 37 Member States and eight international organizations. Twenty additional observers were also in attendance.

The Panel examined the Standards and Recommended Practices (SARPs) contained in Annex 17—Security and decided to establish its Working Group on Amendment 12 to Annex 17 in order to develop recommendations for amendment to the Annex. To ensure that the security measures contained in Annex 17 are commensurate with the level of threat, the Panel recommended that its Working Group on New and Emerging Threats be revitalized and conduct a thorough analysis of potential civil aviation targeting means and methods. The Panel reviewed progress made in the implementation of the Universal Security Audit Programme (USAP) and concluded that this programme has led to increased awareness and commitment on the part of Contracting States to continue improving their level of compliance with Annex 17 and is making a significant contribution to the enhancement of global aviation security.

The Panel also approved new guidance material on liquids, aerosols and gels (LAGs), designed to assist Member States in their harmonized implementation of the guidelines recommended by the Council and concluded that volumetric controls on LAGs and procedural initiatives of Security Tamper Evident Bags (STEBs) should not be considered a permanent solution to the challenge of allowing LAGs in aircraft cabins. States were encouraged to support work in the development and evaluation, at an early date, to deploy screening technologies that are capable of the swift and accurate screening of LAGs in a manner that can be integrated into current security processes. ■

IAC dignitary at ICAO for high-level discussions

Dr. Tatiana Anodina, Chairperson of the Interstate Aviation Committee (IAC), visited ICAO HQ on June 19, 2008 to hold discussions with ICAO Secretary General Dr. Taïeb Chérif, Council President Roberto Kobeh González, as well as Nancy Graham, Director of the ICAO Air Navigation Bureau.

Anodina stressed the IAC's support for ICAO's approach to the development of Regional and sub-Regional cooperation for addressing common issues. She also expressed IAC appreciation regarding the ICAO/IAC project in the field of flight safety being implemented with the participation of the FAA, Boeing and Airbus, noting that 2,500 specialists in the field of flight safety have been trained thus far under this highly successful programme.

ICAO leaders expressed their appreciation for the IAC's initiative to conduct a World Conference of Regional organizations in 2009 to exchange experience and practical suggestions regarding the realization of ICAO strategic flight safety programmes at the Regional level. The Organization commended the IAC's 17 years of successful compliance with ICAO SARPS, as well as the extensive Regional dialogue and cooperation reflected in the over 40 international agreements it has entered into during that time. ■



Dr. Tatiana Anodina (right), Chairperson of the Interstate Aviation Committee (IAC), with ICAO Secretary General Dr. Taïeb Chérif (left), and Council President Roberto Kobeh González (center).



Recent appointment to the ICAO Council

Name: José Luis Vilardo
Country: Uruguay

José Luis Vilardo entered the Military School of Aviation in 1971, graduating as second lieutenant in 1974. He completed all the training courses corresponding to the various military ranks, and currently holds the rank of brigadier general. As a military pilot, he carried out the duties of training pilots for the various aircrafts on which he had been a crewmember, specializing in strike aircraft.

Licensed as a staff officer, Vilardo has also taught at several educational institutions. For four years he was head of the National Committee on Aviation Policy, a multi-ministerial organization whose main function is to advise the Executive on Uruguayan civil aviation policy. During the same period, he also headed the organization which regulates airport and airport concession management, a subsidiary body of the Executive.

As Director of the National Directorate of Civil Aviation and Aeronautical Infrastructure, he was head of the Uruguayan Delegation at the 35th and 36th ICAO General Assemblies. At the 36th Assembly his government named him Permanent Representative of Uruguay on the Council of ICAO until the next Assembly, which is to take place in 2010.

In the capacity of aeronautical authority and ICAO Representative of his country, Brig. Gen. Vilardo has participated in numerous events and has been on several committees of the Latin American Civil Aviation Commission (LACAC). ■

Ensuring room in the skies for sports and recreational aviation

The Fédération Aéronautique Internationale's new Commission on Airspace and Navigation Systems seeks to increase public and regulator awareness as recent developments have begun to make the skies less and less hospitable to recreational aircraft users—a sector which still produces more aircraft movements annually than any in global aviation.

In 1961, ICAO presented its prestigious Edward Warner Award to the Fédération Aéronautique Internationale (FAI). The citation on the Diploma records FAI's *"contribution to the development of air navigation and the dismantling of barriers to international air travel... By stimulating the competitive spirit and promoting aeronautical knowledge, (FAI) has developed public interest in aviation."*

In the century or more since the FAI's foundation, the world has changed enormously. The FAI has evolved with it, but still remains true to its original purposes of regulating air sports, promoting their progress, monitoring exceptional aviation performances the world over and making sport aviation activities easily accessible and interesting for the general public.

Rising fuel costs and a number of other factors are contributing today to an increased climate of indifference and occasionally even hostility toward the world of aviation. Surely this is now a time if ever there was one for all aviators to pull together in the face of common challenges. Yet over time commercial air transport interests have begun to drift further away from their roots in sporting aviation, and those who fly for pleasure and sport are now generally viewed as annoying interlopers in domains (airspace and airports) reserved for commercial air transport activities.

One by-product of this state of events is that regulators often tend to reflect commercial air transport interests rather than those of the most numerous airspace users. In today's skies the majority of aircraft movements world wide continues to be those of sporting and recreational vehicles, and in one continent (Europe) and one air sport alone



(gliding), some 22,000 aircraft fly in aggregate over 500,000 km on a good summer's day.

The FAI currently has members in a hundred countries with well over 2 million individual affiliates. Only a small minority of these have any ambition to fly in core areas, but the constant extension of controlled airspace in non-core areas and the imposition of new, increasingly restrictive regulatory measures are making the pursuit of flying for pleasure more and more expensive and difficult.

In many countries, the FAI is now witnessing declines in air sport participation, while those who stay the course are becoming increasingly frustrated. Commercial aviation benefits from technological advances in sporting aviation (good examples are the use of composite materials for airframe construction and the adoption of winglets to minimize induced drag—first pioneered extensively by glider designers), and sporting aviation has always been and will remain a source of recruitment for well-motivated and committed professional aviators. But there is unfortunately little evidence of the compliment being returned.

From the FAI's standpoint we're definitely at a crossroads in terms of the need for all branches of aviation to once again work together. The FAI fully

recognizes the need for careful management of the ever-increasing demands on airspace, and also that it must do a more effective job of communicating the interests of private airspace users to address current biases toward commercial aviation interests.

To address this concern the FAI has recently established a new body, the Commission on Airspace and Navigation Systems (CANS). The role of this body is to collect and disseminate knowledge and information on airspace regulations and policy, and on Air Navigation Systems, insofar as they may affect the types of aviation in which FAI is involved. The next meeting of the Commission will take place near Frankfurt Airport in early October and wide publicity will be given to its deliberations.

So how would an airspace management system look that gave appropriate freedom of movement to sporting and recreational pilots? There are several general principles and facts that regulators could bear in mind in this respect:

- Expensive electronic devices are often unsuitable for light aircraft using uncontrolled airspace under Visual Flight Rules (VFR) (especially those without engines). The cost of sophisticated navigational equipment can even sometimes exceed the value of an aircraft used for sport and

recreation (especially in the case of paramotors, hang gliders, paragliders, small gliders etc). Inappropriate imposition of additional expensive requirements has the unintended effect of encouraging people to fly less, because their budgets are limited (thus reducing flying currency and increasing the flight safety risk), or even to drop out of aviation altogether.

- The principle of “the beneficiary pays” is fine if the “beneficiary” really benefits. But if the service charged for is one that a pilot has not asked for and does not need, it is tantamount to a compulsory purchase of unwanted goods. What is appropriate for commercial traffic is not necessarily right for private airspace users.
- Sporting and recreational aircraft generally have good to excellent cockpit visibility and low closing speeds. They do not necessarily fly at set altitudes, and pilots are trained to look out continually.
- The main collision avoidance technique in VFR sporting and recreational aviation is “see and avoid.” No electronic device should detract from pilot look out, nor any attempt be made to substitute for it. Visual Flight Rules have worked remarkably well for over 50 years.



- The incidence of collisions in uncontrolled airspace is very low and concentrated in the terminal areas of airfields. Analysis in Australia, for instance, shows that there has never been a legitimate *en route* accident in Class G airspace involving aircraft that did not choose to fly close to each other.
- Unlicensed airfields can and do operate safely at very high traffic levels. On a single day at the annual EAA AirVenture Convention, several thousand aircraft fly in and out of Oshkosh, Wisconsin, using one-way communication and visual identification only.
- Independent, segmented cost-benefit analysis is vital and should take into account hidden costs as well as those that are obvious and visible. Class G—no services—should be the default airspace classification and any additional requirements must be justified on a risk management and cost benefit basis. Segmentation of the cost benefit analysis for each project/charging scheme is required to evaluate the effects, and the consequences of fees on each segment of the user community.

So that is the ideal situation. But we are realists in FAI and recognize that we are unlikely to be left entirely free to play in our “aerial sand pit.” Some form of electronic surveillance of most airspace users seems likely to be imposed in the medium term. And here the regulators have a solemn duty to make the right choices.

Mode S transponders seem unlikely to be generally suitable for all kinds of sporting and recreational aircraft, primarily because TCAS also needs to be installed to obtain anti-collision information. But high costs, greater power consumption and weight considerations make this impracticable for most of the FAI’s airspace users.

ADS-B is widely viewed as the system of the future for worldwide air traffic management and aircraft to aircraft anti-

collision protection. It certainly has advantages, and one is the facility to use GNSS data to feed cockpit moving map displays, which can help reduce inadvertent airspace infringements. Here again, however, such applications are only possible with some categories of sporting and recreational aircraft. And as we have seen, constant consultation of in-cockpit displays may actually inadvertently result in a decrease in overall flight safety.

The message to regulators therefore is to consider and involve all airspace user organizations in the drafting of any new proposals for airspace management. Going through the motions of consultations after proposals have been drafted is not enough.

One of the main objectives of ICAO is to “promote generally the development of all aspects of international civil aeronautics.” This is a worthy aim and one that the FAI certainly shares. We hope that all delegates to ICAO will remember that the sky is definitely big enough for us all. There is no need whatsoever for the different branches of aviation to be at loggerheads. Sporting and recreational aviation depends for its survival on assured access to an adequate volume of unregulated or, at least, lightly regulated airspace. FAI members are happy to share the sky with airliners, but we see no justification whatsoever for being pushed out of the skies by larger aircraft. The entire aviation community needs to be united to maintain public support for our increasingly embattled sector. ■

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High Flyers

By Pierre Portmann, President, Fédération Aéronautique Internationale

The *Fédération Aéronautique Internationale* (FAI) is the official international body responsible for ratifying world records and establishing rules for international competitions in all air sports. Founded in 1905 by visionaries from eight nations (*Belgium, France, Germany, Italy, Spain, Switzerland, United Kingdom, USA*), the FAI has charted the progress of sporting aviation worldwide for over 100 years. This period has seen astonishing technological progress, but the character of the men and women who fly has not changed much—they are still determined, idealistic individualists, driven by a shared passion, and who put the earth into perspective by viewing it from above.

The first FAI President was a Prince—Roland Bonaparte. The industrial revolution had produced distinct social classes and great disparities of income. The common man had limited time and money, so most sports were the preserve of the privileged classes. This link with the upper levels of society, including royalty, was a major factor in creating the high social standing that some aero-clubs retain even to this day.

In the early 1920s, however, business interests entered the aviation arena. Investors started air transport and aircraft manufacturing ventures. Regulation and control became government responsibilities. Eventually, in 1944, ICAO was founded to provide an international governmental regulatory framework for aviation. These developments changed the role of the national aero-clubs and of the FAI. The non-commercial component of aviation retained its prestige, but aviation was henceforth divided between the air transport industry and private sport flying.

Looking back during the FAI's centenary in 2005, we noted that more than half the history of aeronautics predated our organization's foundation. Technological development had always been of key importance. After the Montgolfier brothers' first aerial exploits in 1783, others quickly found that hydrogen provided better, longer lasting lift than hot air, provided the fabric could be made gas-tight. Within a year, all ballooning was with gas. The ballooning era was still at its height in 1905 when the international Olympic Committee encouraged the creation of a supranational institution to regulate and promote international aeronautical sporting activity. Prominent personalities gathered in Paris for the inaugural meeting of what became the FAI.

Technological developments continued apace and new sports soon came along. An FAI gliding committee was formed in 1927. Soon afterwards, in 1935, aeromodelling was recognized. Then, in 1937, rules for helicopter records were introduced. But most ordinary people were denied widespread access to aeronautical sports until the middle of the 20th century, when aviation sports first became widely popularized, particularly in the USA and in France, where the government promoted these activities.

Parachuting joined the FAI family in 1949, hot air ballooning followed in 1963, and aerobatics received separate recognition in 1965, followed by hang gliding (1974), micro-light flying (1982), paragliding (1985), and most recently paramotoring (1995). Virtually all the growth that has taken place in air sports in the past 50 years is attributable to these new disciplines. The air sport scene completely lost its elitist aura. The enthusiasts for "new" air sports did not always emerge from the traditional aviation environment—they were more often "direct entries" into aerial activity, most of them having had no previous aviation background. Today, each air sport operates in its own specialized arena. Their operating environments vary widely, creating correspondingly different cultures.

Reconciling these cultural peculiarities with the need for strict discipline in an ever more restrictive regulatory environment is one of the main challenges facing the FAI. Another is the theme of our main article in this *Journal*: how in future to use modern technology intelligently to permit access to airspace for all those who continue to dream of flying. ■



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