



Prioritizing new Collaborative Frameworks

Global Forum on Civil/Military
Cooperation and new
Policy and Framework for
Regional Cooperation signal
a new focus and action
plan as ICAO responds
to its global challenges

State Profile features: Singapore & Russian Federation

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IATA and CANSO civil/military position statements
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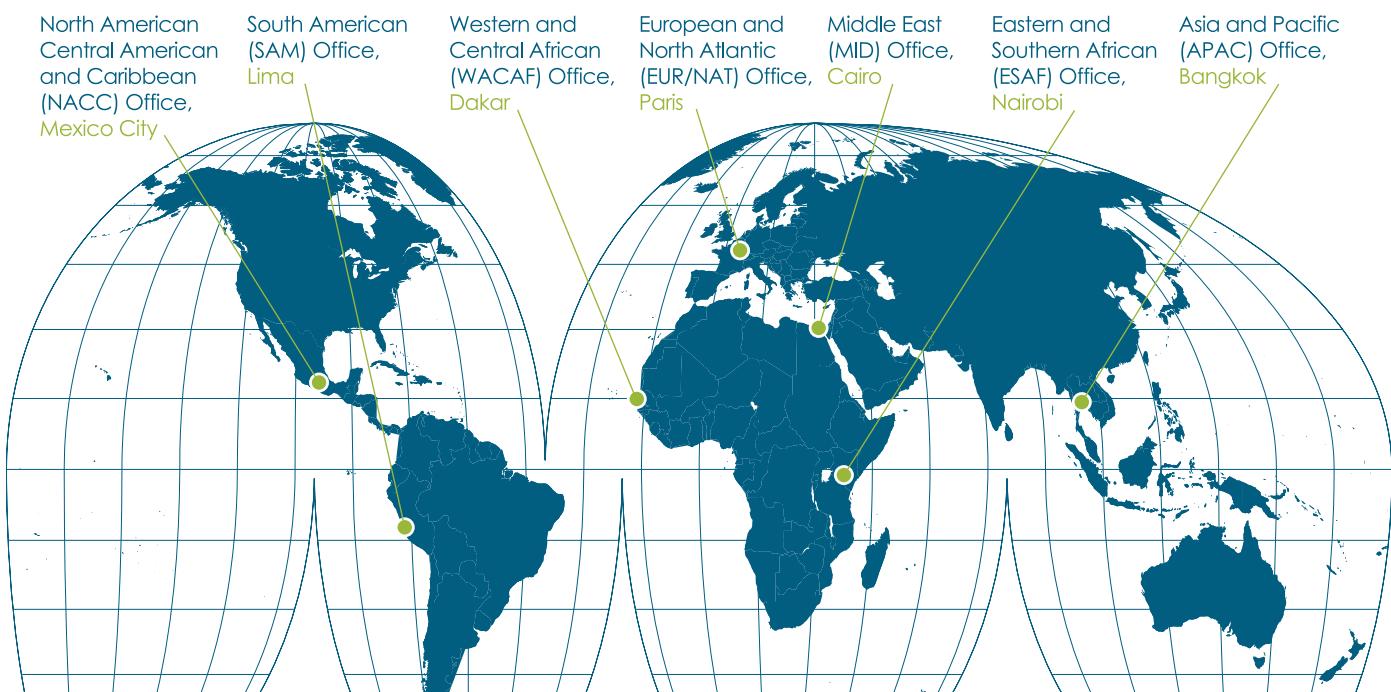
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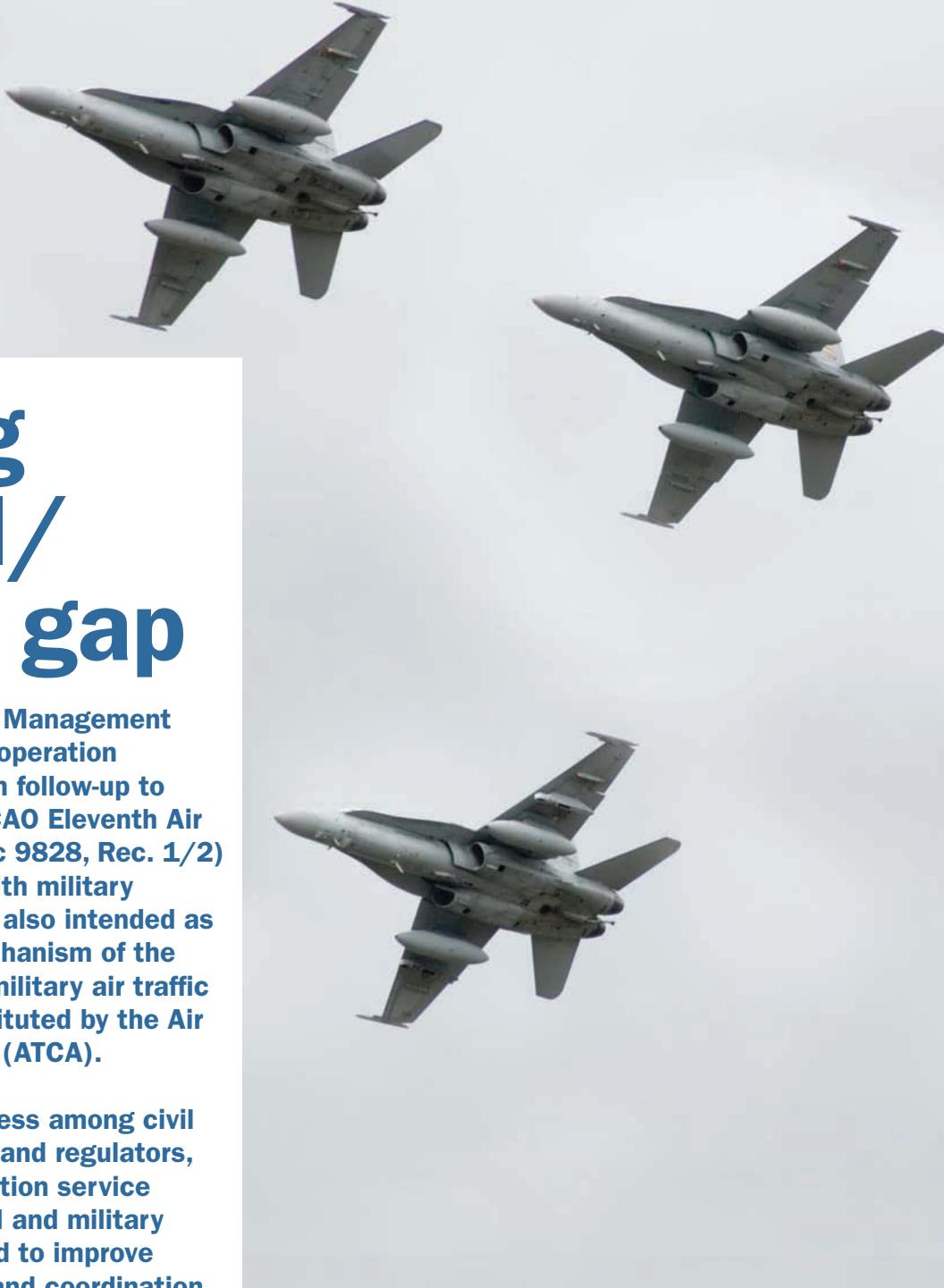
ICAO's Global Presence



Bridging the civil/military gap

The ICAO Global Air Traffic Management Forum on Civil/Military Cooperation (October 2009) was held in follow-up to recommendations of the ICAO Eleventh Air Navigation Conference (Doc 9828, Rec. 1/2) concerning coordination with military authorities. The event was also intended as an integral supporting mechanism of the successful series of civil/military air traffic management summits instituted by the Air Traffic Control Association (ATCA).

The Forum created awareness among civil and military policy-makers and regulators, civil and military air navigation service providers (ANSPs) and civil and military airspace users, on the need to improve civil/military cooperation and coordination in support of an optimum use of airspace by all users. The participation of civil aviation and military officials at the decision-making level was essential to this process, and the event moved forward on ICAO Assembly Resolution A36-13, Appendix 0, *Coordination of Civil and Military Air Traffic*, wherein States were asked to take appropriate action to coordinate with military authorities to implement a flexible and cooperative approach to airspace organization and management.



The Journal spoke with Vince Galotti, Deputy Director, ICAO Air Navigation Bureau (ANB), about the background and results of this landmark gathering that brought civil and military decision-makers to ICAO in the first event of its kind since the Organization's inception in 1944.

ICAO Journal: Why are civil/military coordination issues coming to the forefront now? Could you briefly summarize for *Journal* readers the context that led up to the recent and, in some senses, extraordinary joint civil/military forum that was organized late last year by ICAO?

Vince Galotti, Deputy Director, ICAO

ANB: In years past, the military reserved or owned/operated *huge* amounts of airspace, especially at the point when ICAO was created coming out of WWII.

The world was still a tense place in many Regions at that point in history, a situation which obviously persisted through much of the Cold War with respect to European States. But just as these military tensions had persisted to some extent, so peacetime began to produce a huge expansion in civil aviation infrastructure and operations. As traffic expanded and more civilian flights required greater and greater amounts of airspace, pressures were placed on military leaderships to release their restricted airspaces—not necessarily to give them back but certainly to begin making them available more regularly for civilian needs.

**Are there other factors that have played into this process more recently?
Avionics and Air Traffic Management (ATM) advances, for instance?**

Technology has obviously done a lot to make it happen faster. Airplanes over the years have now become capable of much more direct, point-to-point routings, and information/digital technologies have also allowed for dramatically improved communications and planning so that airspaces can be more flexibly and efficiently switched based on up-to-the-minute civilian or military priorities.

More than anything else, however, I'd have to say that the real drivers for the new degree of focus coming to bear on this issue have been political rather than technological or operational in nature.



From left to right: Neil Planzer, Vice President, Air Traffic Management (ATM) Strategy, Boeing Company; Nancy Graham, Director, ICAO Air Navigation Bureau; Raymond Benjamin, ICAO Secretary General; and Roberto Kobeh González, President of the ICAO Council.

How so?

With respect to ICAO, the Organization was created with the fundamental understanding that business as usual would entail a hands-off posture with respect to all things military. To this day there's still only one Article—Article 3 in the Convention—that even refers to it (*Article 3 to the Convention on International Civil Aviation is reflected in full for readers on page 5*).

The civil/military system has therefore functioned such that States have overseen their militaries under exclusive and non-cooperative frameworks. These relationships supported the sovereignty and security concerns that are of underlying importance to all States, but they in no way provided for the effective exploitation of those key efficiencies that are now becoming a bigger priority in the face of the traffic growth realities we touched on earlier.

With air navigation technologies now allowing for more flexible approaches to airspace management, the key objective

for ICAO at this stage in the process is to provide more active leadership to its Member States about the importance of the issue and the solutions that are available to them.

Specifically what would ‘leadership’ refer to in this context given the limited nature of the provisions in Article 3?

The only reason we have the global civil aviation system we all make use of today is because countries have worked through ICAO over many decades to develop the vast array of laws and Standards that permit their civilian aircraft to fly across borders and continents, safely and efficiently. Essentially this whole civil/military programme is a response to a need that has become perceived for ICAO to expand its mandate to now provide the same type of focal point for more cooperative and harmonized military airspace approaches.

Though Article 3 doesn't provide for the creation of actual Standards in this domain, other mechanisms for

persuasion, such as State Letters for instance, can be employed by ICAO to help guide States toward new ways of thinking about the challenges before them and the benefits that more cooperative solutions can provide.

How will ICAO be approaching this new challenge?

The recent Forum was a good example of what we can do. Essentially we'll be holding more seminars on the topic, we'll be inviting military officials to planning meetings that they were never invited to in the past, and ICAO officials will also be present at more military gatherings in the future than had ever been the case previously.

Another thing which ICAO does very well is provide effective forums whereby States can share best practices with one another. At the October 2009 event a number of States, particularly those in the EUR/NAT Region, gave presentations on some of the sophisticated software they're now employing to enable what's become known as the Flexible Use of Airspace (FUA) concept.

ICAO will also put forward an Agenda Item be included at the 37th Session of the ICAO Assembly in 2010. This will be an amendment to Assembly Resolution A36-13, Appendix O, which will specifically address improving civil/military cooperation and help ensure momentum gained at the 2009 Civil/Military Forum is strengthened at high levels within State administrations and international organizations.

Getting back to the political challenges that will be encountered, how does the approach to military airspace differ from State to State at present?

Certainly there's a fairly large developed/developing world divide in this respect. In the developed world neighbouring States are not generally confronted with the types of volatile security situations that affect certain Regions. In countries such as the U.S., the management of civil/military airspace is often a very simple matter the military advising the civilian authority—in this case the FAA—that they need their airspace for a finite period of time. The FAA accommodates this request and then the airspace is returned for civilian use once the military has completed its exercises. It's all very straightforward.

ARTICLE 3 OF THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

Article 3

- a) This Convention shall be applicable only to civil aircraft, and shall not be applicable to state aircraft.
- b) Aircraft used in military, customs and police services shall be deemed to be state aircraft.
- c) No state aircraft of a contracting State shall fly over the territory of another State or land thereon without authorization by special agreement or otherwise, and in accordance with the terms thereof.
- d) The contracting States undertake, when issuing regulations for their state aircraft, that they will have due regard for the safety of navigation of civil aircraft.

Article 3 bis*

- a) The contracting States recognize that every State must refrain from resorting to the use of weapons against aircraft in flight and that, in case of interception, the lives of persons on board and the safety of aircraft must not be endangered. This provision shall not be interpreted as modifying in any way the rights and obligations of States set forth in the Charter of the United Nations.
- b) The contracting States recognize that every State, in the exercise of its sovereignty, is entitled to require the landing at some designated airport of a civil aircraft flying above its territory without authority or if there are reasonable grounds to conclude that it is being used for any purpose inconsistent with the aims of this Convention; it may also give such aircraft any other instructions to put an end to such violations. For this purpose, the contracting States may resort to any appropriate means consistent with relevant rules of international law, including the relevant provisions of this Convention, specifically paragraph a) of this Article. Each contracting State agrees to publish its regulations in force regarding the interception of civil aircraft.
- c) Every civil aircraft shall comply with an order given in conformity with paragraph b) of this Article. To this end each contracting State shall establish all necessary provisions in its national laws or regulations to make such compliance mandatory for any civil aircraft registered in that State or operated by an operator who has his principal place of business or permanent residence in that State. Each contracting State shall make any violation of such applicable laws or regulations punishable by severe penalties and shall submit the case to its competent authorities in accordance with its laws or regulations.
- d) Each contracting State shall take appropriate measures to prohibit the deliberate use of any civil aircraft registered in that State or operated by an operator who has his principal place of business or permanent residence in that State for any purpose inconsistent with the aims of this Convention. This provision shall not affect paragraph a) or derogate from paragraphs b) and c) of this Article.

* The 25th (extraordinary) Session of the Assembly on May 10, 1984 amended the Convention by adopting the Protocol introducing Article 3 bis. This amendment came into force on October 1, 1998.



CANSO: A WILLING AND ACTIVE SUPPORTER OF IMPROVED GLOBAL CIVIL/MILITARY COOPERATION

As programme partner and gold level sponsor to the 2009 Global Forum on Civil/Military Cooperation, CANSO was particularly pleased with the outcome of this event. The acceptance of ICAO—by both the civil and military aviation communities—as the most appropriate global forum for civil/military cooperation and to promote the exchange of best practices, is a very positive step for the global aviation community. It was notable that this is the first time both civil and military aviation interests have come together and openly acknowledged the need to work together.

CANSO's Global Vision on the Future of Air Navigation Services (ANS) has the creation of a seamless ANS system at its heart, and this can only be achieved by ensuring that civil/military cooperation is optimized and mutually beneficial. Rapid growth in civil air traffic has put increasing pressure on scarce airspace resources and the military has its own challenges such as new training requirements for modern military aircraft. Only through mutual cooperation can mission-oriented military air traffic and capacity-oriented civil air traffic be handled smoothly and in a manner that satisfies current and future needs and requirements.

It is CANSO's firm belief that good performance in Air Traffic Management (ATM) stems from good government policy-making and political will, and this is even more important in the case of civil/military cooperation. States' commitment to addressing the institutional hurdles will go a long way to effectively resolving the challenges ATM now faces—whether it's improving route efficiency and improving environmental benefits, increasing capacity or enhancing safety.

It is important to recognize that civil/military cooperation is not just about airspace—it is about sharing information, building trust and understanding of each other's needs and requirements. You first need some fundamental institutional and organizational building blocks in place before you get to the stage of implementing concepts like flexible use of airspace (FUA) or more advanced dynamic airspace management models. Those Regions that have the biggest challenges of airspace design and capacity also have no tradition of civil/military cooperation, and there is tremendous potential to learn from the experiences of other Regions.

Given the very positive first step represented by this landmark ICAO-hosted event, it is now very important that we have the appropriate follow-up and that we do not lose the momentum. The entire aviation community—both civil and military—has high hopes for a continuation of this activity that has been initiated by ICAO, and CANSO and its Member ANSPs will continue to actively support developments to ensure the success of this endeavour.

In many States today, however, there are huge blocks of restricted airspace that impede on the growth and effective management of civilian air transport needs. These countries tend to be characterized by more political tension, both internally and externally, and the military leaders there are more suspicious of civilian authorities and less respectful of civilian concerns. This reaches an extreme in some States whereby no one can fly over the country at all, or else routes have to be adhered to very closely to avoid causing military intercepts. The restrictions can also be a function of less-advanced technologies being present and therefore fewer ATM solutions being available for consideration by civil and military planners.

Another big political challenge in certain States is more historical in nature, whereby the military will have had control of the State's airspace for many decades and it becomes part of the power structure that sustains their authority and privilege. This is where political maturity is so important and we are beginning to see some States and Regions, notably China and the Middle East, making very good progress in this respect.

Do these new solutions have an impact on how pilots need to prepare for and fly their routes?

The flight planning system on airplanes today are fairly complicated so pilots always prefer to receive the most advanced notice possible for any route deviations that might be required. In the past a pilot could receive a verbal route change advisory and they could turn their aircraft to adjust. Today's avionics are more precise but they're also much more complicated, and the extent of the procedures required to alter a route in-flight becomes a source of tension and apprehension for the aircrew. Pilots and navigators are very happy to receive advance notice of a route change, but less so once they're in the air.

Besides ICAO, State Civil Aviation Authorities (CAAs) and respective militaries, who are the other important partners that need to come together if the near- and longer-term civil/military objectives are going to be met? What role, for instance, are the Air Navigation Service Providers (ANSPs) playing in this?

Organizations like CANSO and IATA are very important in this process. Both are extremely motivated due to the efficiency and cost-savings that more flexibly managed airspaces allow

for (please see the CANSO and IATA perspectives on pages 6 and 8 respectively).

In general, the ANSPs that are semi- or fully corporatized are constantly pressured to deliver the most cost-effective routes. They therefore have all the buy-in they require basically as part of their day-to-day objectives as they seek to give their airline clients the best possible service.

For IATA and its airlines, shorter routes engage that tremendous win-win for commercial aviation of lower operating costs, better passenger service and improved environmental performance.

ICAO is currently working on a new *Manual on Civil/Military Cooperation* as part of the Action Plan (see page 9) it has established in response to the results from the 2009 Forum. What will that Manual be putting forward to help address the issues we've been speaking about here?

The Manual's purpose will be to set out best practices in this area as part of the transfer of knowledge and expertise that needs to occur between leading and more needful States. Primarily it will be building on lessons learned and methods that have been established in North America and in Europe for

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IATA: BUILDING ON POSITIVE EXPERIENCES TO MAXIMIZE FURTHER GROWTH

The importance of proper airspace management, and for civilian and military authorities to work together to manage airspace as a whole, is essential to the safety and efficiency of the air traffic system. Airspace is an international and national resource that is essential for aviation—both civil and military, and aviation, be it civil or military, is essential to our global and national security and economies.

Although both civil and military users share the same airspace, both need to work more closely together to develop methods to optimize the use of it. Today, there is no established international platform to accomplish this, however IATA sees ICAO as the natural choice to act as the bridge builder that will bring civil and military perspectives closer together.

The Global Air Traffic Management Forum on Civil/Military Cooperation was a big success in this regard. High ranking military and civil airspace authorities showed a genuine interest and willingness to use ICAO as a forum for exchanges that can facilitate interaction and the development of a set of globally-useable best practices for airspace management that can meet both civil and military requirements.

The Forum's 'Going Forward' session resulted in the following summary of recurring statements that were offered by both civil and military participants:

1. Peace and stability are essential preconditions for social and economic development.
2. Mutual trust and confidence of respective roles and responsibilities are the principal requirements for a collaborative civil-military cooperation effort.
3. Safety, security and efficiency are common civil and military values.
4. Efficiency for civil aviation means more capacity—less delays, costs and fuel burn (emissions).
5. Efficiency for military aviation means mission effectiveness and realistic training—during peace and crises—but equally more capacity, less delays, costs and fuel burn (emissions) for all airspace users.
6. The 'Three Cs,' namely: Cooperation and coordination through communication.
7. Civil-military cooperation is necessary at national, Regional and international levels.
8. Airspace is a continuum and a common limited resource for all civil and military airspace users.
9. Wide awareness and application of flexible use of airspace principles are a good common basis for global civil-military ATM coordination.
10. Civil-military interoperability is essential to optimize the safe and efficient use of airspace for the benefit of all users. Operational, technical and financial constraints preventing the reduction of the interoperability gaps must be duly addressed by the aviation community as a whole.
11. Integration of Unmanned Aerial Systems (UAS) is a challenge but also an opportunity for the growth of the whole aviation system.
12. International civil-military cooperation and coordination is an indispensable requirement both in peacetime and in crisis situations.
13. A global civil-military interagency approach to security, incident pre-emption and management is needed, building on existing positive experiences which have great potential for further growth.
14. Much remains to be done, not only on the flexibility of airspace use but also on compatible standards and procedures and on global interoperability of ATM/CNS systems.
15. Successful collaboration requires: Communication, Education, Relationship and Trust.

the benefit of other Regions that haven't achieved the same degree of flexibility and dynamic interaction between civil and military authorities. Obviously Europe's challenge is much more complex in this respect, as it has 50 or so States to manage and oversee.

What's been the feedback from the militaries that you've heard from to this point?

The military leaderships are concerned both with security issues and also with airspace management being responsive to the rapid technological developments that characterize military activity. Intercepts, for instance, happen much more quickly today than they did in the past and this is an important security issue that more regularly interconnects civil and military priorities today.

Then there's new aircraft such as the F-22 that cruise at supersonic, see over the horizon, and consequently need much larger airspaces for much less time, whereas the older generation of fighters required smaller airspaces. The military

needs reassurance that they can work effectively with civilian authorities so that airspaces can respond to these types of developments in a manner that benefits all concerned.

How important do you see the role of the ICAO Regional Offices being in all of this?

Very, very important. Each region has different requirements, different kinds of states, military realities, tensions, etc. Toward the end of the Forum we had the ICAO Regional Directors make presentations about their territories and all agreed that ICAO would be organizing follow-on events (please see abridged statements from all of ICAO's Regions on pages 10-13).

As I've stressed throughout, this issue is highly political and very local in nature in many parts of the world. This is one of those issues where ICAO HQ and its Regional leaderships will need to be highly coordinated to ensure effective ownership of this issue and myself and my Regional colleagues are looking forward to the challenges ahead.

CIVIL/MILITARY COOPERATION ACTION PLAN

The ICAO Global Air Traffic Management Forum on Civil/Military Cooperation agreed that the Organization, States, military authorities and industry partners will endeavour to work together for mutual benefit as per the following Action Plan.

As this was not a formal ICAO meeting, follow-up activities will first have to be approved by the Council with the advice of the Air Navigation Commission, who will be presented with the results of the Forum in the near future.

#	Activity	Target date	Responsible	Remarks
1	Use ICAO as an open forum for civil military cooperation, collaboration and sharing best practices.	Ongoing	Air Navigation Bureau and Regional Offices	ICAO was recognized to serve as the international facilitating platform where civil/military cooperation and coordination should be discussed and progressed.
2	Develop a new <i>ICAO Manual on Civil/Military Cooperation</i> .	June 1, 2010	Informal Drafting Group (IDG) Carlos Cirilo (IATA)—Chairman; Gustavo De Leon—Secretary	IDG will continue with the work to develop the Manual based on the outline endorsed by the Forum. Additional members will be incorporated to the IDG.
3	Disseminate an ICAO State Letter to advise States and international organizations about the results of the Global Air Traffic Management Forum on Civil/Military Cooperation and the follow-up actions.	December 11, 2009	Gustavo De Leon	Solicit in the State letter the submission of best practices and lessons learned, to be included in the <i>Manual on Civil/Military Cooperation</i> .
4	Work together toward ensuring the safe and efficient integration of unmanned aircraft systems into non-segregated airspaces.	Ongoing	UAS Study Group	IDG will coordinate with UAS SG (Secretary) for contribution to the Manual on UAS.
5	Work together on ATM security issues.	Ongoing	ATM Security Informal Group Roger Rapier (FAA)—Chairman Gustavo De Leon—Secretary	ATM Security Informal Group is developing guidance material for last semester 2010.
6	ICAO will propose an agenda item be included on the agenda of the 37 th Session of the ICAO Assembly, addressing civil/military cooperation and ensure momentum gained in GATM CIV/MIL Forum is strengthened at high levels within State administrations and international organizations.	Finalized	ATM section	Agenda Item on Civil/Military Cooperation has been included in the Technical Committee of the 37 th General Assembly, September 2010.
7	Present an Assembly working paper proposing an amendment to Assembly Resolution A36-13 Appendix O, Coordination of Civil and Military Air Traffic, aimed at strengthening States commitments to enhance cooperation between civil and military authorities.	April 2010	Gustavo De Leon	Working paper will be presented to 184 th Session of ANC (April-June 2010).
8	ICAO Regional Directors will further promote civil and military cooperation through Planning and Implementation Regional Groups (PIRGS).	Ongoing	Regional Offices Directors	
9	All of the civil/military cooperation partners will collaborate to support regional events.	2010–2012	CANSO, EUROCONTROL, IATA, NATO, ATCA, UVS International	Civil/Military Cooperation Regional seminars will be conducted in ICAO Regions to improve Civil/Military Cooperation in States. ANB will advise partners of upcoming regional events.
10	ICAO will convene, together with its partners, a second global forum at an appropriate time, to measure progress on civil/military cooperation and to determine the next level.	TBD	ATM Section	

Civil/military cooperation: Regional perspectives

The ICAO Global Air Traffic Management Forum on Civil/Military Cooperation (October 2009) was attended by Directors from all of ICAO's Regional Offices. The following are the abridged perspectives they offered as civil and military participants explored the next steps in harmonizing this new area of focus for ICAO and global stakeholders.



MOKHTAR AHMED AWAN
Regional Director, ICAO APAC Office

Civil/military coordination issues have long been recognized as important to the APAC Region. The focus on civil/military coordination and cooperation has been a key factor contributing to civil aviation advancements, with primary focus on optimizing the joint use of airspace to ensure the improved safety, regularity and efficiency of civil traffic.

APAC civil/military initiatives over the past few years have included:

- New route structures and the introduction of RVSM through the airspace of the Democratic People's Republic of Korea (DPRK) with the cooperation of their military organizations.
- The opening of additional entry/exit points by China with their neighboring States for the 2008 Beijing Olympics in coordination with their military.
- A proposal to realign the present ATS route structure in the Afghan, Indian and Pakistani airspaces in cooperation with each State's military authorities.
- The introduction of high-level civil/military committees in Cambodia, Lao PDR, Malaysia, Thailand and Vietnam, for the purpose of introducing multi-use airspace in their respective FIRs. Progress in these ventures has already been demonstrated.
- The inclusion of civil/military coordination issues on the agendas and/or task lists of Regional ATS coordination groups so that States could seek cooperation from military authorities with respect to the realignment of prohibited, restricted and danger areas, where required.

The Asia and Pacific Region was fortunate to be selected to host the Civil and Military Air Traffic Management Summit 2007 (CMAC 07). The Summit was the largest forum of its kind and addressed civil/military airspace, air traffic and airport issues driven by evolving needs around the world and the conflicts that arise in the use of shared airspace. It also took into account the future air traffic control systems and their relationship to defence and security issues. The Summit emphasized efforts to increase capacity, especially in shared airspace and to satisfy both civil and national sovereignty needs.

ICAO APAC recognizes the importance of civil/military coordination and continues to engage pertinent stakeholders to more effectively achieve the Flexible Use of Airspace (FUA) for all States and militaries in the Region. Increasingly, the establishment of additional non-permanent Air Traffic Services (ATS) routes (Conditional Routes, or CDRs) in APAC demonstrates the effectiveness of civil/military coordination in the Region and directly addresses Global Planning Initiative 1 (GPI-1—Flexible Use of Airspace).

ICAO APAC, in line with the deliberations during the Global Air Traffic Management Forum on Civil/Military Cooperation, will endeavour to further promote civil and military cooperation through the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG).



LORETTA MARTIN
Regional Director, ICAO NACC Office

Based on the main air traffic flows in the NAM and CAR Regions, several advances have been achieved for civil/military coordination. The main goal at present is the use of Special Use Airspace (SUA) for civil air traffic. Highlight advances recently and historically have included:

- In the West Atlantic Route System (WATRS) Plus Route Structure Redesign and Separation Reduction Project, supported and facilitated by the ICAO NACC Regional Office with its amendment to the CAR/SAM Air Navigation Plan, the United States removed the warning areas, operating areas and weapons ranges in the vicinity of Puerto Rico that are no longer necessary.
- Cuba and Mexico now have Letters of Agreement between their respective civil/military authorities to facilitate regular air operations within restricted areas while active.
- An agreement on the Cooperation System of the American Air Forces for Civil/Military use was reached in May 1973 among the Western Hemisphere States for the provision of Search and Rescue (SAR) services in the NAM/CAR/SAM Regions.
- The Regional Air Surveillance System (SRVA in Spanish) is being established as the Regional civil/military coordination body in the Central America Flight Information region (FIR).

These agreements specify responsibilities, collaboration, assistance and operational facilities and will significantly simplify civil/military cooperation processes among States. In this regard, a 2008–2012 Regional strategy was approved by GREPECAS in 2007 to review and establish civil/military coordination bodies.

The performance-based Regional strategy is based on outcomes from the CAR/SAM/3 Regional Air Navigation (RAN) Meeting (1999) to:

- Improve cooperation between civil and military authorities as well as Air Navigation Service Providers (ANSPs).
- Review associated procedures for an optimized and Flexible Use of Airspace (FUA) with dynamic airspace management processes.
- Establish a Collaborative Decision Making (CDM) process.
- Implement dynamic ATC sectorization.
- Provide the best balance between demand and capacity to respond in real-time to changing situations in traffic flows.



KARSTEN THEIL
Regional Director, ICAO EUR/NAT Office

The operational environments in the European (EUR) and the North Atlantic (NAT) Regions are different, and therefore the procedures for civil/military coordination are different as well. In the NAT Region, an organized track system is put in place twice a day to accommodate the main flow of air traffic and ATC clearances are issued, so as to ensure separation from cost-out until cost-in. Surveillance is based on position reports and ATC intervention is difficult, if not impossible. In this strategic environment, military activities have to be coordinated well in advance with appointed units on each side of the ocean. The military activities are normally accommodated in moving airspace reservations.

In the EUR Region, communication and surveillance enables a tactical environment in which ATC interventions and re-clearances are the norm rather than the exception. Over the territories of most of the States in the western part of the Region, the concept of Flexible Use of Airspace (FUA—as developed by EUROCONTROL) has been implemented. Recently, the European Air Navigation Planning Group has modified the concept for use by non-EUROCONTROL member states as well, including airspaces over the high seas.

In both Regions, however, the challenge of civil/military coordination is to accommodate not only military training activities but also activities with the purpose of airspace security and national defence. This challenge was best demonstrated on September 11, 2001, when a huge number of civil aircraft in the North Atlantic Region had to turn back and seek alternate destinations due to the closure of the airspace over North America.



MOHAMED KHONJI
Regional Director, ICAO MID Office

In light of the often volatile nature of MID affairs, the Region currently contains no fewer than 536 military (Danger, Prohibited and Restricted) airspaces. This constitutes an obvious challenge to air traffic for MID operators, Civil Aviation Authorities (CAAs) and Air Navigation Service Providers (ANSPs), who are consequently in continuous direct coordination with the ICAO MID Regional Office in Cairo.

The Organization's MID Air Navigation Planning and Implementation Regional Group (MIDANPIRG) meetings, as well as subsidiary Air Traffic Services/Search and Rescue/Aeronautical Information Services (ATS/SAR/AIS) Sub-group (SG) meetings, are key instruments at the disposal of MID States in this regard.

Optimized 'great circle' routes agreed to in Regional meetings occasionally fail to become established due to military airspace restrictions or political considerations, leading to less-efficient routings and increased Air Traffic Services (ATS) complications. Further implications for civil aviation, *inter alia*, include:

- Extra track miles and increased costs.
- Fragmentation of airspace.
- Non-implementation of ATS routes.
- Congested airspace in certain FIRs.
- Lack of Flexible Use of Airspace (FUA).

The primary role and responsibilities of the ICAO MID Regional Office in trying to minimize these ATS inefficiencies involves a number of harmonized activities. It encourages State CAAs to establish dialogue with national and also foreign military authorities (when operating in their area), provides assistance to States in the form of joint civil/military meetings and seminars, and suggests that its States include, where necessary, representatives from their military authorities in all delegations to relevant Regional meetings.

The MID Office's main goals related to civil/military issues at present are:

- To discourage the establishment of new military areas for non-operational reasons.
- To formalize Letters of Agreement (LOAs) between civil/military authorities.
- To encourage Joint Use of Airspace (JUA).
- To improve inter-State cooperation and coordination with regards to Flexible Use of Airspace (FUA) by promoting commonly agreed principles for the establishment of the FUA concept and ensuring the interoperability of ATM systems and equipment (i.e. Ground-Air, Ground-Ground).
- To include representatives from military authorities in delegations to Regional meetings and in Area Control Centres (ACCs).

Together, these elements and concerns reflect the problems and the vision of the MID Region and the ICAO MID Office in its ongoing efforts to make the MID airspace more flexible and efficient for all Regional stakeholders.





GEOFFREY P. MOSHABESHA
Regional Director, ICAO ESAF Office

The Eastern and Southern Africa Region has 229 airspaces which are classified as Restricted, Danger or Prohibited. Twenty-four percent of these are low-level, nature conservation related restriction zones. Less than five percent of the military-use airspaces are NOTAM-activated. Although only 12 percent of the military-use airspaces directly affect upper airspace, its negative impact is not insignificant, particularly on long-haul intercontinental flights.

The Africa-Indian Ocean (AFI) Regional Air Navigation (RAN) Meetings and AFI Planning and Implementation Regional Group (APIRG) Meetings have formulated several Recommendations and Conclusions urging States to reduce the number of special-use airspaces and the length of time that these are unavailable for civil use. Additional conclusions have focused on improved coordination with civil aviation, specifically air traffic services.

Much work remains to be done, however, as the number of special-use airspaces has changed little for many years now. Furthermore, only one State seems to have adopted a widely-applied Flexible Use of Airspace (FUA) policy.

In an effort to enhance civil/military cooperation, the ICAO Eastern and Southern African Office (ESAF) is planning a Civil/Military Cooperation Seminar in 2010, which will be following-up on the conclusions that arose from the 2009 Global Civil/Military Cooperation Forum.



FRANKLIN HOYER
Regional Director, ICAO SAM Office

During ATS route network improvements in the SAM Region (2000), the major difficulties faced in implementing new RNAV routes was the number of restrictive airspaces that affected the ATS network and the general lack of effective civil/military coordination.

One of the activities initiated to address these concerns was the First Seminar on Civil/Military Coordination for the SAM Region, carried out in Lima, Peru, in October 2005. This Seminar agreed on many actions that have improved civil/military airspace management and enabled the implementation of many RNAV routes accordingly.

Improved as the new airspace may have been when the ATS upgrades were completed, the fact remained that the resulting network was still built upon a decades-old system put in place when fleet operating capacities were very different from what they are today. Many route trajectories therefore were still not as optimized as they could be. In view of this, the SAM Region looked into the possibility of carrying out a new review of the current routes network from scratch. To do so would require more cooperative planning among all the parties involved, including service providers and civil/military users, and the Flexible Use of Airspace (FUA) concept would be of key importance to guarantee that the requirements of all airspace users would be effectively met.

To ensure the application of the FUA concept, it has been suggested that each State should create a Civil/Military Coordination Committee to evaluate opportunities related to their Special Use Airspaces (SUA). The SAM Office is committed to this objective and will accordingly be following-up on a previous event of this nature with its Second Seminar on Civil/Military Coordination for the SAM Region, now being planned for 2011.

The SAM Regional Office recognizes the very positive relationships amongst the various civil/military aviation authorities in its States. They continue to contribute to the very professional, cooperative and productive aviation environment in our Region. ■

ICAO Council adopts new Regional policy and framework for cooperation

As ICAO stands at the threshold of a renewed vision under new leadership inspired by innovative thinking, the Council of ICAO, at its 188th Session in October, 2009, has adopted a new *Policy and Framework for Regional Cooperation* with a view to enhancing the Organization's interaction and cooperation with Regional organizations and civil aviation bodies.

Captain Catalin Cotrut, Representative of Romania on the Council of ICAO, describes for the *Journal* how ICAO now stands at a defining crossroads on its continuing path towards achieving the aims and objectives as set out for it in the Chicago Convention, and why its new policy and framework for Regional objectives will serve as an integral tool as the Organization continues to pursue the full extent of its Mission and Vision Statements.



Captain Catalin Cotrut is Representative of Romania on the Council of ICAO. He was Chairman, Council/Secretariat Group on Regional Bodies, which drafted the ICAO Regional Policy and Framework on Cooperation.

ICAO's new *Policy and Framework for Regional Cooperation*, a first in the Organization's 65 year history, is timely and necessary, and calls for a harmonious blend of leadership and partnership.

The policy is focused on ICAO's rendering, to the full extent possible within the technical and policy aspects of international civil aviation, of essential assistance, advice and other forms of support to Member States. It is based on the fact that Regional cooperation should involve the triumvirate of ICAO, namely the Member States, Regional organizations and Regional civil aviation bodies.

The policy goes on to affirm that ICAO will promote Regional cooperation through close partnerships with such organizations and bodies and that, with respect to its implementation, ICAO will make optimal use of its resources both at Headquarters and its Regional Offices and apply the principles enunciated in the relevant ICAO Assembly Resolutions, guidance and policy.

In developing the policy, which conforms to the Vision and Mission Statements of ICAO and which furthermore will be

implemented directly by the Secretary General, the Council was mindful that globalization confronts smaller and disadvantaged countries with many challenges that can be handled more effectively through cooperation with other States. The policy also reflects that emerging trends suggest that the world economy in this century is likely to consist of a network of various forms of Regional cooperation.

New developments in Regionalism, particularly in Europe and the Americas, make it clear that States of other Regions may need to speed up their aviation activities in the fields of safety, security, sustainability and efficiency or else risk becoming marginalized in an increasingly competitive global landscape.

The policy aims at promoting cooperation through the expanded use of best practices and better utilization of existing capabilities and resources within the Regions. It will accomplish this in part by improving services and making best use of resources—acknowledging the different levels of competence that exist in specific States. It also takes into account relevant provisions of the *Convention on International Civil Aviation* (aka the Chicago Convention) and relevant ICAO Assembly Resolutions.

The policy is aimed at enabling States to understand ICAO policy and implement the Organization's Standards and Recommended Practices (SARPs) contained in the 18 Annexes to the Chicago Convention. It also seeks to identify existing opportunities for sub-Regional cooperation and to promote potential bodies for new partnerships, provide advice on capacity building, assess the gaps in

knowledge and capabilities to meet requirements, and finally to improve existing practices.

In practical terms, the policy would apply to cooperation in technical and/or policy matters, as appropriate, with technical bodies (such as ACAC, AFCAC, LACAC, and Regional safety oversight organizations) as well as between ICAO and Regional organizations, such as the African Union and the European Union, among others.

ICAO's Regional Offices will have a vital role to assume with respect to

the implementation of the new policy. Therefore these offices will take into account in their inputs to strategic planning the Regional needs and opportunities for cooperation with Regional civil aviation bodies, Regional organizations and other stakeholders, with a view to assisting States in ensuring more effective harmonization in adherence to ICAO SARPs.

Implicit in the policy is the statement that, while ICAO encourages the activities of States, Regional civil aviation bodies and Regional organizations in facilitating the

development of civil aviation infrastructure and the implementation of ICAO SARPs, States ultimately remain responsible for their obligations under the Chicago Convention, notwithstanding whatever arrangements they may conclude with their Regional organizations and Regional civil aviation bodies.

A further objective of the policy is to avoid duplication and achieve harmonization in all Regions with respect to improvements in the technical and/or policy areas by strengthening cooperation between ICAO, the Regional civil aviation bodies and Regional organizations. It also aims at



“ With a view to setting its course in line with rapidly-evolving trends related to globalization and Regionalization, the Organization has embarked on implementing an aggressive *Business Plan* that calls for a cultural transition and change of mind-set that accords with the dynamics of an evolving aviation industry.”

ensuring adequate expertise and resources are made available for aviation infrastructure development and for carrying out oversight functions. Sharing information and data and ensuring specialized training and expertise in the development of national/Regional plans are also notable objectives, along with enacting appropriate civil aviation legislation as necessary.

In implementing the policy, ICAO will enhance its cooperation with Regional civil aviation bodies and Regional organizations and ensure that cooperation with States which do not belong to Regional organizations and Regional civil aviation bodies is not jeopardized or compromised. It will also encourage States to direct their respective Regional civil aviation bodies and organizations to closely cooperate with ICAO and to assign them tasks in the context of that cooperation.

Regional bodies will furthermore be invited, pursuant to their rules of procedure, to give sympathetic consideration to the possibility of inviting ICAO Member States that may not be part of their organization to participate as observers in their meetings.

ICAO will meet periodically with Regional civil aviation bodies, including an annual high level meeting, and define as necessary the role to be played by the Regional Offices in coordinating ICAO cooperation with Regional stakeholders.

The Framework for Regional Cooperation

The Framework for Regional Cooperation, which is the driver of the policy, is essentially a strategic plan of action drawn up in accordance with the ICAO Policy on Regional Cooperation and the Business Plan of the Organization. The objective of this framework is to formulate and implement Regional cooperation activities to enhance ICAO's role as the global forum for international civil aviation, as well as to further strengthen ICAO's Regional activities

with Regional civil aviation bodies and organizations.

The Framework is designed to better prepare ICAO to develop a bilateral mechanism of Regional cooperation between the Organization and the Regional civil aviation bodies and/or Regional organizations (e.g. agreement with EC).

A formalized *Strategic Plan of Action on Regional Cooperation* will be developed by ICAO's Secretary General, in consultation with the Council of ICAO, and will be implemented via Regional operational plans which are consistent with the Business Plan of the Organization. These plans will establish tasks, accountabilities and timelines and will be measured by appropriate performance indicators.

The Regional operational plans will be drawn in accordance with the needs and priorities of the different Regions and tasks will be clearly identified and assigned both at Headquarters and the Regional Offices. The main thrusts of the *Strategic Plan of Action* are:

- Common efforts at harmonizing, between States, operational regulations, requirements and procedures based on ICAO SARPs implementation.
- Understanding and defining clear roles and responsibilities.
- Establishing improved mechanisms for consultation and cooperation, including electronic information sharing.
- Coordinated programme planning and implementation between ICAO and the Regional civil aviation bodies.
- A periodic review of Regional issues.
- Maximizing the effective use of resources at ICAO.
- Benefiting from each other's competence and expertise.
- Joint training and capacity building.

Conclusion

The creation of a more effective security and safety culture and an increased

awareness of the effects of aviation on the environment among ICAO's 190 Member States are the most compelling need for global aviation at present.

In this context, enhanced cooperation between ICAO and Regional civil aviation stakeholders is a critical factor. The new *Policy and Framework for Regional Cooperation* serves as a vital tool that will ensure global and Regional harmonization in facing current issues and consolidating cooperation and mutual assistance. At a time when ICAO is evolving its focus from pure standardization to increased action on assistance and implementation, the basic principles of such a shift necessarily involve a consolidation of responsibilities and assurances of accountability. The development of more effective partnerships between ICAO and Regional organizations/bodies is essential to these objectives.

ICAO is now at a defining crossroads on its continuing path towards achieving the aims and objectives as set out for it in the Chicago Convention. With a view to setting its course in line with rapidly-evolving trends related to globalization and Regionalization, the Organization has embarked on implementing an aggressive Business Plan that calls for a cultural transition and change of mind-set that accords with the dynamics of an evolving aviation industry.

New leadership and new thinking have been great catalysts in this process and, by eliminating a fog of rhetoric which in the past tended to obfuscate the role of the Organization, a new flight path has now been cleared that enables the Organization to steer towards a more relevant role in the near- and long-term. In this context, the new ICAO Policy and Framework for Regional Cooperation is an integral tool that will enable the Organization to realize the full extent of its Mission and Vision Statements. ■



SINGAPORE

Inspired By Our Past | Building For The Future

“First, to understand Singapore,
you've got to start off with an
improbable story...”

Lee Kuan Yew
Singapore Minister Mentor



Image courtesy of MICA/Photography by Wong Sai Weng

Few gave Singapore much chance of survival when it gained independence in 1965. With no natural resources, Singapore had to build new opportunities when none existed; and forge new paths which had never been trod.

As history would have it, a generation of people managed to overturn the odds through sheer determination, hard work, sacrifice and ingenuity; aided throughout by those near and far who extended their hands of friendship.

As a small but strategically located island-state at the crossroads of the East and the West, Singapore has been cognisant of the internationality of its existence. It is therefore no surprise that in the midst of building up a sound government, forging a national identity and laying the nation's infrastructure, Singapore also began work on building the fabric for a global city that would connect the island-state to the

world. This included becoming an ICAO Contracting State within a year of independence.

Today, Singapore is recognised for being the world's easiest place to do business, and having the second-most transparent government in the world. Amongst other things, the country has also become a key financial, education and logistics hub, with world class rankings. Singapore has hosted a number of key international meetings, including the inaugural World Trade Organization (WTO) Ministerial Conference, 2006 Annual Meetings of the Board of Governors of the International Monetary Fund (IMF) and World Bank, and Asia-Pacific Economic Cooperation (APEC) Leaders Meetings.

In aviation, it is home to the world's seventh busiest airport for international passenger traffic, handling close to 38 million passengers in 2008. It is also home to a world-class airline, and a thriving aerospace industry. Over 80 airlines operate more than 4,850 scheduled flights weekly, connecting passengers between Singapore and 200 cities in 60 countries – and the numbers continue to grow.

“Changi Airport is the first and last impression that most visitors have of Singapore. It is therefore a standard bearer for the Singapore brand.”

Lee Hsien Loong,
Singapore Prime Minister





Image courtesy of SATS



BUILDING THE AVIATION INDUSTRY

Spurring Innovation, Fostering Growth

The passion and pioneering spirit that fuelled Singapore's early years of civil aviation development can be traced back to a century ago in 1911, when the first aircraft, a Bristol Box-Kite biplane belonging to Joseph

Christiaens, took off and landed in Singapore on a soccer field.

Since then, spurred by the possibilities of innovation, Singapore's aviation industry has grown from strength

to strength. Today, the industry is a picture of vibrancy. Singapore's Changi Airport has grown into an iconic world-class airport, recognised for its service excellence and operational efficiency, with a superior infrastructure that can support some 70 million passengers and 3 million tonnes of cargo annually. In 2009, Changi Airport earned the "Best Airport - Asia" award given by Cargo NewsAsia, making Changi the record holder of this award for 23 years; as well as the "Best Airport in the World" by the Business Traveller (UK), for a record 21 consecutive years since 1988.

WHAT OTHERS SAY

BUSINESS ENVIRONMENT

- World's Easiest Place to do Business (*World Bank, 2009*)
- Top Workforce in Advanced Countries (*BERI Report 2009*)
- 2nd Most Profitable Place for Investors (*BERI Report 2008*)

INVESTMENT CLIMATE

- Most Politically Stable Country in Asia (*Political & Economic Risk Consultancy, 2009*)
- Least Corrupt Country in Asia (*IIMD World Competitiveness Report, 2008*)
- 2nd Most Transparent Country in the World (*IIMD Competitiveness Yearbook 2008*)

STANDARD OF LIVING

- Best Quality of Life in Asia (*Mercer Human Resource Consulting, 2009*)
- Best Air Transport and Port Infrastructure in the World (*The Global Competitiveness Report, 2009*)
- Best Medical/Wellness Tourism Destination (*TravelWeekly - Asia Award, 2008*)
- Best Shopping Destination in Asia, and Third in the World (*Global Country Brand Index, 2008*)

To date, Changi Airport has garnered over 300 accolades. Not one to rest on our laurels, planning has already started on a new airport master plan to meet aviation needs in the longer term.



Image courtesy of Singapore Airlines

Going International, Creating Synergies

Singapore understands the importance of international civil aviation in building the foundation for greater social, political and economic development.

Our flagship carrier, Singapore Airlines, was founded in 1972; and in 1985, the government made a conscious decision to leave it to fend for itself amongst international competitors. The carrier flourished, and today it continues to chart new grounds in innovation, safety and service excellence, including being the first to fly the longest long-haul flight and the first commercial airline to fly the Airbus A380. Singapore Airlines is now one of the world's revered premier airlines, opening new frontiers in aviation for air travellers. Other international flagship carriers have followed, with SilkAir, Jetstar Asia, Tiger Airways,

Valuair and Jett8 Cargo also calling Singapore home, adding diversity to the industry.

The aviation landscape in Singapore has also grown in diversity and dynamism, with over 100 international Maintenance, Repair and Overhaul (MRO) companies providing a comprehensive array of services and facilities in the Asia Pacific Region. The aerospace industry in Singapore has enjoyed a compound annual growth rate of 13 percent this past decade, and handles more than one-fifth of Asia's MRO activities, including high-value activities such as design, research and development. These activities have

been anchored by industry stalwarts; SIA Engineering Company, which has one of the world's largest one-stop maintenance facilities and the first A380 MRO provider in the world; and Singapore Technologies (ST) Aerospace, which is acknowledged as the world's largest airframe MRO provider.

"At a dinner in July 1972, I spelt out the need for a Singapore airline to be competitive and self-supporting; it would close down if it incurred losses. We could not afford to run an airline just to show the flag like other countries did."

FINANCIAL HUB

- World's Third Leading Financial Centre (2009 Global Financial Centres Survey)
- World's Fourth Largest Foreign Exchange Trading Centre
- 2nd Largest Over-the-Counter Derivatives Trading Centre in Asia
- Leading Commodities Derivatives Trading Hub

Lee Kuan Yew,
Singapore Minister Mentor



Singapore is committed to leveraging its status as an aviation hub to advance the development of civil aviation worldwide. Singapore hosts the third-largest air-show after Paris and Farnborough, providing an enduring platform to showcase the latest aviation innovations; bringing together over 50,000 visitors and 800 exhibitors from some 50 countries together in partnerships and transactions. The 300-hectare Seletar Aerospace Park was also developed to house various MRO and aerospace systems and components, design and manufacturing companies, to foster synergistic collaborations to support the aviation business.

Liberal Framework, Limitless Opportunities

The liberal air transport policy that Singapore adopts serves as a catalyst for aviation growth and greater opportunities for development. Singapore has concluded air services agreements with more than 100 countries, of which close to 40 are open-skies agreements. The country



is also a founding member of the world's first multi-lateral open-skies agreement and remains a strong proponent of the liberalisation of

air services between states in the Association of Southeast Asian Countries (ASEAN).

LOGISTICS HUB

- 85 airlines operating more than 4,850 services connecting Singapore to 200 cities in 60 countries
- Top Air Transport and Port Facilities in Global Competitiveness Index (GCI) 2009 conducted by the World Economic Forum (WEF)
- Host to 21 of the 25 largest third-party logistics companies in the world
- World's busiest container port with 200 shipping lines linking to 600 ports in 123 countries



BUILDING SAFER SKIES

Commitment to Safety, Collaboration in Security

Safety and security remain the top priorities for Singapore in the provision of air navigation services in the Singapore Flight Information Region for close to half-a-million flights annually. Investments are continuously made in new technologies and processes to enhance air navigation services, with the latest investment of S\$300 million for the next-generation Air Traffic Management System. Singapore's Air Traffic Control has obtained a deficiency-free rating from the International Federation of Air Line Pilots' Associations (IFALPA) for a record 28 consecutive years, and the IATA Eagle Award for the 'Best Air Navigation Service Provider'.

Singapore is also a strong proponent of ICAO's safety initiatives, including the State Safety Programme, Safety Management System and the Universal Safety Oversight Audit Programme (USOAP); and provides technical assistance to support these



initiatives as well as those under the Cooperative Development of Operational Safety and Continuing Airworthiness Programme (COSCAP).

In the field of aviation security, Singapore has played an active part in the development of an ICAO-led harmonised response to threats, such as liquid explosives onboard aircraft. The country currently participates in efforts to chart the future direction of aviation security through its participation in the ICAO Aviation Security (AVSEC) Panel, and contributes to the ICAO Comprehensive Aviation Security Strategy. As a founding member of the ICAO public key directory system for biometric passports, Singapore

“...in a country where the cityscape is constantly changing, the Changi Control Tower remains an effective anchor, immediately recognisable as a source of pride as well as a sense of home...”

Raymond Lim,
Singapore Minister for Transport and
Second Minister for Foreign Affairs

is also committed to exploring the use of new technologies to enhance aviation security.

Since 2003, Singapore has contributed its expertise to the "Cooperative Arrangement for the Prevention of Spread of Communicable Diseases through Air Travel" project in Asia Pacific (CAPSCA-Asia Pacific), after the risks of the spread of pandemics by air travel were brought to the fore by the Severe Acute Respiratory Syndrome (SARS) outbreak in Asia. Singapore has since assisted with the launch of similar CAPSCA projects in other regions and contributes actively to the review and development of ICAO Annex 9 Standards and Recommended Practices.



BUILDING PEOPLE CAPABILITIES

A Nexus for Knowledge Sharing and Thought Leadership

The Singapore Aviation Academy was established more than 50 years ago with the mission to provide human resource development programmes for the international aviation community. The Academy has since trained more than 48,000 participants from 190 countries, and continues to strengthen international technical cooperation and develop critical human resources for the industry.



The ICAO-Singapore Developing Country Training Programme was established in 2001 to avail funds for training programmes offered to the developing countries. Due to overwhelming demand, the ICAO-Singapore Developing Country Training Programme was extended to 2013, bringing the total number of fellowships offered to 600.

The Singapore Aviation Academy organises the World Civil Aviation Chief Executives' Forum and co-organises the Aviation Leadership Summit, bringing a confluence of top civil aviation officials, academics and industry practitioners together to exchange views and debate new ideas for the advancement of the civil aviation industry. In recognition of its role in augmenting human capital development, the Singapore Aviation Academy was awarded the 34th Edward Warner Award by the ICAO Council.



Contributing Expertise, Sharing Experiences

Over the years, Singapore has built competencies and expertise in various aspects of civil aviation management, and is committed

TALENT HUB

- 1st in Quality of Education System
(The Global Competitiveness Report, 2009)
- Host to 16 distinguished Foreign Tertiary Institutions including INSEAD, DigiPen Institute of Technology and the German Institute of Science and Technology
- World's least restrictive immigration laws for foreign talent
(IMD World Competitiveness Yearbook, 2008)



to sharing our knowledge with aviation partners around the world. Singapore has actively participated in some 70 ICAO panels, committees, working groups and task forces to help shape international standards in a broad range of areas, from air transport management to aviation medicine. Besides contributing to the Air Navigation Commission (ANC), Singapore's technical experts also hold leadership positions in a number of expert groups across diverse areas. These include the AVSEC LAGS Guidance Materials Working Group, ICAO Medical Provisions Study Group, the ANC Working Group on Procedural Matters, and the Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG).

protection. When Changi Airport was being constructed in the late 1970s, Singapore's then Prime Minister commented that when he drove to the airport on its opening day in 1981, he wanted "to see a jungle". Officers in charge of the project had to report every day on how many trees had been planted.

Today, Singapore affirms and supports ICAO as the most appropriate United Nations agency with the relevant expertise and impetus to address climate change issues associated with the aviation industry. Climate change is a global event requiring a global solution. Singapore will continue to work closely with ICAO to implement the ICAO Programme of Action for environment that was endorsed by consensus at the High Level Meeting on International Aviation and Climate Change, chaired by Singapore in October 2009.

At the regional level, Singapore has had the privilege to work with other Asia Pacific states and industry partners to optimise route processes over the Bay of Bengal and across the South China Sea to reduce congestion and fuel consumption. Singapore will also be participating in the Asia and Pacific Initiative to Reduce Emissions (ASPIRE) to collaborate with air service providers within and across the Pacific for greater flight efficiency.

At home, the Singapore Airlines Group has implemented the Environmental Management System, compliant with the ISO 14001:2004 Standard, in four of its entities. Singapore Airlines has committed



BUILDING A BETTER FUTURE

Confronting Climate Change, Building a Greener Future

Singapore has always been cognisant of the importance of environmental

BIOMEDICAL HUB

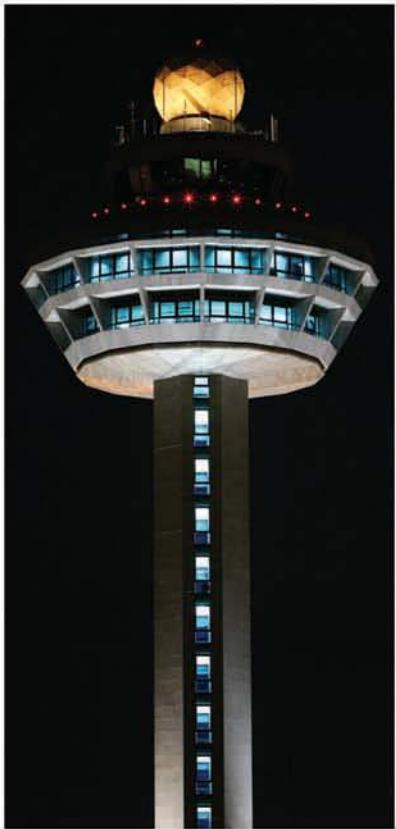
- Biomedical R&D Hub with over 2,000 international researchers spearheading advancement in human health
- Regional Headquarters for World's top 10 pharmaceutical and biotechnology companies
- One of Asia's fastest-growing bio-clusters and leading global manufacturing site for innovative medicines



to a comprehensive fuel productivity programme that includes maintaining a technologically advanced fleet, and a comprehensive airframes and engines maintenance programme to achieve increased fuel efficiency. Our airport operator, the Changi

Airport Group, has also incorporated environment-friendly energy conservation features into the design of the new Changi Airport Terminal 3, with skylights and sunshades to channel natural lighting into building interiors, while minimising heat infiltration and glare.

As we move into the next decade and beyond, Singapore's dedication to building the aviation industry remains strong. We look forward to making more contributions to its development and working with ICAO and all its Contracting States to forge new paths and build better futures.



Championing Development, Continuing Contributions

In 2003, Singapore was honoured to be elected into Part II of the ICAO Council, and has been an active member of the Council since then. Singapore acknowledges the affirmation of the international civil aviation community for our contributions, and will continue to find new ways to develop global civil aviation and to help shape policies and standards.

Singapore remains committed to supporting ICAO's initiatives through the contribution of resources and technical expertise, and shares its vision of promoting safety, security, environmental protection and sustainability in civil aviation. Indeed, the rapid growth of Singapore's aviation industry was made possible in part due to ICAO's efforts to grow international air transport in a safe and orderly manner.

“ As the world changes... We have to live with the world as it is, not as we wish it should be. We must remain nimble to seize opportunities that come with changing circumstances, or to get out of harm’s way. ”

Lee Kuan Yew,
Singapore Minister Mentor



SOUTHEAST
ASIA
OVER 350 FLIGHTS
WEEKLY TO 28 CITIES


**SINGAPORE
AIRLINES**
A great way to fly

A STAR ALLIANCE MEMBER 

Singapore Airlines flies to: **BANDAR SERI BEGAWAN** **BANGKOK** **DENPASAR** **HANOI**
HO CHI MINH CITY **JAKARTA** **KUALA LUMPUR** **MANILA** **SINGAPORE**

SilkAir* flies to: **BALIKPAPAN** **CEBU** **CHIANG MAI** **DA NANG** **DAVAO** **KOTA KINABALU** **KUALA LUMPUR** **KUCHING** **LANGKAWI** **LOMBOK**
MANADO **MEDAN** **PALEMBANG** **PENANG** **PHNOM PENH** **PHUKET** **SIEM REAP** **SOLO CITY** **SURABAYA** **YANGON** **SINGAPORE**

*SilkAir is the regional wing of Singapore Airlines



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Corporation

Singapore Changi Airport, Charting the Way Forward in Civil Aviation

A milestone in Singapore's aviation history was established on 1 July 2009 when Changi Airport was corporatised to form Changi Airport Group (CAG). A dynamic new entity, CAG undertakes the management of Singapore Changi Airport and is committed to developing it as a global air hub.

Global Connections

With 85 airlines operating more than 4,800 weekly scheduled flights to 200 cities in some 60 countries, Singapore Changi Airport is a leading air hub in the Asia Pacific. Located in the heart of Asia, Singapore is a key financial and business centre and growing tourist destination. The city hosts international events such as the world's first Formula One night street race, and two mega resorts. Besides being a bustling hub for full service carriers, Singapore is experiencing one of Asia's strongest growth in low cost travel which reinforces Changi as the preferred gateway to the region.

Strong Support for Airlines

CAG maintains a collaborative relationship with its airline partners, helping them to identify growth opportunities. It offers a comprehensive range of incentive schemes to support the airlines' growth while keeping costs competitive.

Setting benchmarks in Civil Aviation Standards

CAG is committed to working with ICAO to develop and implement the highest possible standards in operations, safety and security in civil aviation. The Group continually seeks advancement in civil aviation standards for

the benefit of industry players and the travelling public. As an example, CAG played a leading role in the standardisation of security measures involving liquids, aerosols and gels carried in hand luggage.

Planning for Future Growth

CAG adopts a proactive policy of ensuring capacity ahead of demand to cater to growth in air travel and airline operations. With a total handling capacity of 70 million passengers per annum at the airport's four terminals - Terminals 1, 2 and 3 and Budget Terminal - Changi Airport is well-positioned to serve the region's aviation needs into the future.

Contributing to the Environment

CAG supports the sustainable growth of the aviation industry and considers the impact of its operations on the environment. For instance, many environmentally friendly features were incorporated in the design of Changi Airport's Terminal 3. These included a roof design that optimises the amount of natural sunlight allowed into the building so that artificial lighting is not needed during the day, and an energy-conserving air-conditioning system. Other environmental

efforts include the use of CNG tractors and hybrid tractors in airside operations, Photovoltaic power plants to generate energy, recycled materials for pavement and concrete constructions, and treated waste water for fire-fighting, sanitation and cooling purposes.

As a member of the world's aviation community, CAG is proud to support ICAO's work on improving civil aviation standards and recommended practices for airport operations.





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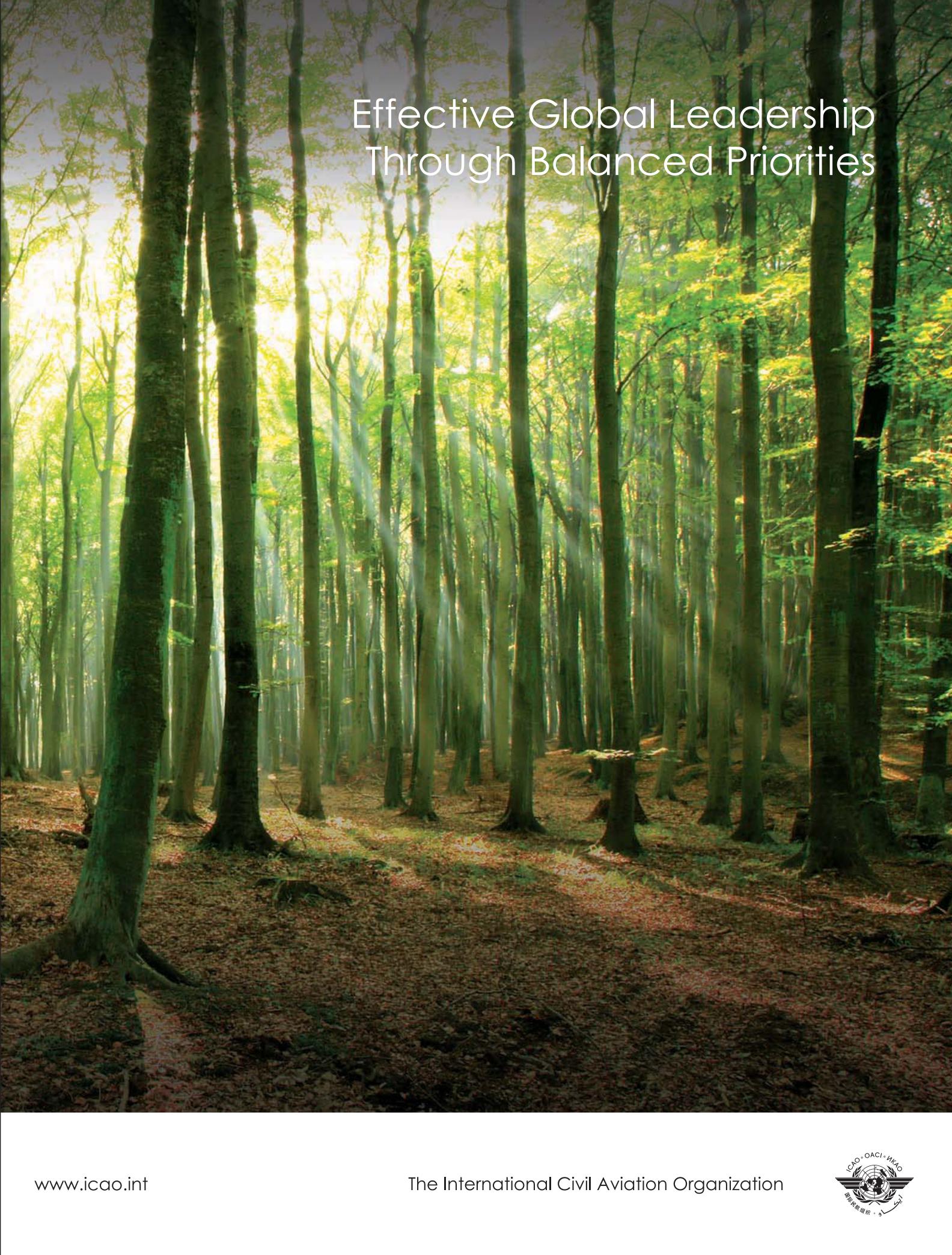
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E-mail: wenyen_loh@sats.com.sg



Effective Global Leadership Through Balanced Priorities



Towards more effective SAR provision in the Arabian Gulf

From an overall industry perspective, there is a strong need at present for more coordinated SAR services in Regions that are not being adequately serviced through unilateral programmes.

As Saif Mohammed Al Suwaidi, Director General, UAE General Civil Aviation Authority comments, airlines can scarcely be expected to pay air navigation charges for services not properly provided, and a need has arisen for neighbouring States or groups of States to assume more responsibility on Regional and sub-Regional levels for SAR service provision.

ICAO and International Maritime Organization (IMO) convene an annual working group of aviation and maritime SAR experts from a cross-section of their Member States. Together, these officials review and develop SAR guidance material for the *International Aeronautical and Maritime SAR (IAMSAR) Manual*.

The IAMSAR Manual states that:

In many areas of the world, the fastest, most effective and practical way to achieve a global SAR service is to develop regional systems associated with each ocean area and continent.”

A Regional or sub-Regional SAR arrangement is beneficial from two perspectives: it cost-effectively serves all aviation and maritime traffic without leaving any gaps in its coverage; and it relieves the sense of stigma for States that may be unable to provide an effective SAR service unilaterally.

Operationally and technically, SAR can be well managed from far fewer and more widely-dispersed centres. In those States where Rescue Coordination Centres (RCCs) have been consolidated within a given Search and Rescue Region (SRR), massively reduced costs have thoroughly vindicated the initiative. These coordinated efforts also reduced accommodation, equipment and training requirements, as well as improving overall staff proficiencies due to increased operational exposure.

It is presently a Recommendation of ICAO Annex 12—Search and Rescue, that Flight Information Regions (FIRs) and Search and Rescue Regions (SRRs) should be coincident. This harmonization facilitates rapid and effective emergency response by a single State SAR authority and limits obstacles to improved operational coordination. It can also be reasonably projected that the present trend towards a reduced number of FIRs and Air Navigation Service Providers (ANSPs) will extend to Search and Rescue Regions (SRRs) and SAR Service Providers over the coming years.

The Arabian Gulf sub-region consists of the Kuwait, Jeddah, Bahrain, Emirates, Muscat and Tehran SRRs and encompasses extensive land masses and oceanic area. These Gulf States are among the better-resourced of States in the Middle East and are therefore particularly well-placed to provide strong support to the greater Region in the event of a major catastrophe.

Because the geographic spread of State territories in the Gulf is relatively limited, the area is well-suited to a sub-Regionalized service arrangement. At the same time, there are political sensitivities in the Region that are latent threats to timely and effective response unless SAR is planned and managed proactively and in consideration of the common good. There could scarcely be a more appropriate

situation for the early exploration of more cooperative SAR provision.

As an early non-threatening step, the UAE would propose that a Regional SAR Coordination Committee could be established with representation from all participating administrations and the ICAO and IMO Regional Offices. As well as researching how best a sub-Regional SAR service might be arranged, the committee could also be a useful forum for member administrations to meet and discuss general SAR issues of common interest and to exchange information concerning, for example, rights of entry for SAR craft, available resources, risk management, safety systems, sharing arrangements and other functions and responsibilities.

The overriding need is for a spirit of wholehearted cooperation to characterize every aspect of the SAR service throughout the Gulf and the world. Consideration of inter-agency circumstances, historic relationships and the any impact from future political and social events should be kept subservient to this greater good.

It is in profound mindfulness of the need and the prospect for improved SAR services and, equally, of the paramount requirement for harmonious and equitable relations among nations, that the United Arab Emirates signals its preparedness to take initiative in this task in the Arabian Gulf. ■



Signature by Chile

Chile signed the General Risks Convention of 2009 during a brief ceremony at ICAO Headquarters on September 29, 2009.

Shown on the occasion (from left to right) are Denys Wibaux, Director, Legal Affairs and External Relations Bureau, ICAO; Patricio Victoriano, Representative of Chile to ICAO and Consul General of Chile in Montreal; and Francisco Costa, Alternate Representative of Chile to ICAO. ■

Deposit by Lesotho

Lesotho deposited its instrument of accession to the Convention on the Marking of Plastic Explosives for the Purpose of Detection (Montreal, 1991) during a brief ceremony at ICAO Headquarters on November 10, 2009. This brought the total number of States parties to the Convention to 142.

Shown on the occasion (from left to right) are: Denys Wibaux, Director, Legal Affairs and External Relations Bureau, ICAO; Moshe N. Kao, Acting High Commissioner of the Kingdom of Lesotho in Ottawa; and Raphael Lipholo, First Secretary, High Commission of the Kingdom of Lesotho in Ottawa. ■





Signature by Nigeria

Nigeria signed the General Risks Convention of 2009 during a brief ceremony at ICAO Headquarters on October 8, 2009.

Shown on the occasion (from left to right) are Dr. Olumuyiwa Bernard Aliu, Representative of Nigeria on the Council of ICAO; Denys Wibaux, Director, Legal Affairs and External Relations Bureau, ICAO; Babatunde Omotoba, Minister of Aviation of Nigeria; and Dr. Harold Olusegun Demuren, Director General, Nigerian Civil Aviation Authority. ■

Deposit by the United Arab Emirates

The United Arab Emirates deposited its Letter of Notification of Association with the International COSPAS-SARSAT Programme as a Ground Segment Provider during a brief ceremony at ICAO Headquarters on October 27, 2009. The COSPAS-SARSAT Programme provides accurate, timely and reliable distress alert and location data to help search and rescue (SAR) authorities assist persons in distress. ICAO and the International Maritime Organization (IMO) are joint depositaries of the International COSPAS-SARSAT Programme Agreement.

Shown on the occasion (from left to right) are Denys Wibaux, Director, Legal Affairs and External Relations Bureau, ICAO; Aysha Al Hamili, Representative of the United Arab Emirates on the Council of ICAO; and His Excellency Mohammed Al-Ghaifi, Ambassador of the United Arab Emirates to Canada. ■



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Total

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2010 ICAO CALENDAR OF EVENTS

Meetings	Site	Duration
Next Generation of Aviation Professionals Symposium	ICAO Headquarters, Montreal	March 1–4 2010
High-level Safety Conference 2010	ICAO Headquarters, Montreal	March 29–April 1 2010
ICAO Colloquium on Aviation and Climate Change	ICAO Headquarters, Montreal	May 11–14 2010
Diplomatic Conference	Beijing, China	August 30–10 September 2010
Assembly – 37 th Session	ICAO Headquarters, Montreal	September 28–8 October 2010



The Russian Federation: Key strategies targeting civil aviation development

In 2009 the Russian Federation (Russia) concentrated its major civil aviation efforts on a range of key priorities. These included bolstering the development of more accessible cross-country air transportation, increasing the affordability of air transport for all Russian citizens and improving flight safety. Additionally, the Russian Federation placed renewed focus on maintaining and developing its extensive airport network and system of civil aviation infrastructure.





Integrating Russia more meaningfully into global aviation frameworks, as well as maintaining State resolve in helping industry overcoming the effects of the world financial crisis, were other notable areas of Russian aviation activity in the past year.

The Government of the Russian Federation during 2009 adopted significant strategies that will be greatly assisting Russian planners in their ongoing evaluations of focus areas for civil aviation development. Foremost among these programmes were the:

- Russian Federation transport strategy for the period to 2030.
- Federal target Programme—*"Transport system development in Russia (2010–2015)"*.
- Federal targeted investment programme for 2009.
- Federal target programme—*"Transport system modernization in Russia (2002–2010)"*, comprising a civil aviation sub-programme.
- State Programme for providing civil aircraft flight safety.

Commercial sector review

In 2008, despite the world financial crisis, passenger transport operations in Russia totalled 49.8 million travellers. This exceeded the corresponding index for the previous year by 10.4 percent. AEROFLOT, SIBIR, TRANSAERO, ROSSIYA STATE TRANSPORT COMPANY and UTAIR became the leading passenger operators and presently account for approximately 54 percent of all transport operations.

Freight turnover also increased—by 6.4 percent—to 778.7 thousand tonnes. VOLGA-DNEPR, AirBridgeCargo, AEROFLOT-R, SIBIR, POLET and TRANSAERO represented the most significant contributors to Russian air freight movements, accounting for some 65 percent of all transport operations in this sector.

The growing volume of Russian passenger and freight traffic is primarily attributable to the emergence of new airlines and the increasing use of existing air routes. In the course of intergovernmental negotiations,

substantive progress was achieved in the further development of air communications between Russia and China, Turkey, Israel, Ukraine, Tunisia, Tajikistan, Italy, Switzerland and others.

The recent world financial crisis has had a negative impact on the aviation industry, resulting in a decreased air transportation growth rate since August 2008 and a negative transportation volume change rate since October 2008. Since January 2009 the growth rates have slowed down 10 percent for passenger transport operations and 8.4 percent for cargo operations.

One of the results of the world financial crisis is a lack of resources for some sectors of the aviation industry. Air transport operations numbers reveal that the market alone cannot solve industry problems, such as pricing, costs and operational needs. State assistance is necessary in this case. The Government of the Russian Federation took the following measures aimed to overcome the crisis related to aviation fuel supply for air operations:

- Introduce into practice a model contract for the delivery of aviation fuel between oil companies and airlines, including a price formula for aviation fuel and updated with account for recommendations provided by the Ministry of Transport of Russia.
- Set up alternative fuelling structures at airports.
- Amended into Federal Aviation Regulations "Certification requirements to enterprises providing aviation fuel supply for air transportation" relating to irreducible stocks of aviation fuel at the airports, minimum tank farm volumes on the basis of average daily aviation fuel consumption and establishing the maximum fuel consumption for every airport (restricting the number of daily operations) taking into account the available tank farm.

Aviation fuel is delivered by river or marine oil carrier to 98 northern airports.

The Federal Air Transport Agency of Russia permanently controls the delivery of aviation fuels and lubricants to these airports.

Russian aircraft fleet

The central issue of civil aviation development is the replacement of the Russian airline fleet with competitive aircraft and aviation equipment. At present the fleet consists of 2,550 commercial long-range and regional aircraft.

In 2008, 282 technical inspections of the organizations responsible for maintenance services and the repair of aircraft and aviation equipment, including 12 off-schedule technical inspections, were carried out. Expert organizations also evaluated the airworthiness of civil aircraft and, as a result of these inspections, 1,653 certificates of aircraft airworthiness were issued, including 276 certificates of airworthiness to single aircraft.

Currently, Russian aircraft manufacturers are planning for the recovery of full-scale production of modern aircraft, and other high-tech projects.

RUSSIAN FEDERATION CIVIL AVIATION: DEVELOPMENT STRATEGY

- Develop and in some cases rehabilitate commuter and regional air operations. It primarily concerns regions lacking alternative ground transport means.
- Increase the affordability of air transport operations through competition, cost reduction and improved infrastructure quality through use of state support mechanisms for airlines.
- Provide continuous professional development of state inspectors as related to new aircraft and aviation equipment technologies.
- Develop professional training system in aviation educational institutions. Update aviation personnel training programmes and consolidate the resource base of aviation educational institutions.
- Improve flight personnel training system for foreign-built aircraft.
- Coordinate the activities of the civil aviation and aircraft industry in issues related to increased aircraft efficiency and human factor considerations during their design and maintenance. Set up a system to prevent the use of counterfeit products.
- Increase efficiency of the use of state property.
- Improve and develop civil aviation airports network and its infrastructure. Improve the quality of flight operations ground support.



Airport activities

Of the 329 airports operating in the Russian Federation, 117—including 70 approved for international flights—form a national airport network.

To help preserve and further develop the airport network, the sub programme “Civil aviation” plans to reconstruct 103 runways during the period of 2010–2015. In 2008, construction or reconstruction of runways at airports serving the following eight cities were completed: Astrakhan, Vnukovo, Tolmachevo, Koltsevo, Irkutsk, Mineralniye Vody, Penza and Vladikavkaz. In 2008, the replacement of lighting equipment was also completed at airports serving the following eight cities: Vnukovo, Guelendzhik, Ufa, Cheboksary, Syktyvkar, Bratsk, Novokuznetsk and Mendeleyevo. Also completed in 2008 was the installation of ground-based augmentation systems (GBAS) at airports serving Krasnoyarsk and Samara. In 2009, reconstruction of 11 airports, including those serving Sochi, Vladivostok and Ekaterinburg, was planned.

The size of the Russian Federation and the insufficient development of ground transport communications within its territories—especially in regions of the North, Far East and Siberia—demand the need for sustained aviation communications and safe and efficient operations of the airport network.

New Information Technologies in Aviation (NITA)

Today in addition to research and development of new aeronautical facilities within a framework of State programs, Russia has a rapidly growing and quickly responsive private sector engaged in research and production of sophisticated equipment to fulfill the current and future needs of its aviation industry. For example, more than 100 ATC centers and 200 aviation companies operate systems and equipment developed by NITA company,



RUSSIAN FEDERATION CIVIL AVIATION: SHORT-TERM GOALS

- Finalize regional transportation development programme for the period to 2015.
- Improve the mechanism of state financial support for local-domestic routes.
- Develop a procedure for the assessment of air carrier financial stability; carry out continuous monitoring of airlines' finances and take immediate measures to prevent aviation enterprises ceasing operations and failing to fulfil the obligations to passengers.
- Continue conducting target inspections to check flight safety.
- Complete the re-structuring of state-run higher and secondary civil aviation professional education;
- Reassess state standards of higher and secondary professional education, and student and cadet training programmes subject to ICAO recommendations.
- Provide no less than 45,000 flying hours for aviation school students.

which provides a full range of services for the development, manufacturing, delivery, commissioning and support of engineering products.

Staffing

The Federal Air Transport Agency of Russia oversees aircraft staff training in educational institutions and tends to the problems of facilities and equipment. Since 2006, the rate of student enrolment in civil aviation educational institutions has been escalating annually, however, to date the number of specialists graduating does not fill the gap of aviation staff shortages.

Today, the average age of a civil aviation pilot in Russia is approximately 50, and the number of pilots over 50–60 years of age is growing rapidly. In the last 15 years, the civil aviation flight personnel average age has increased more than 10 years. The average age of an aircraft commander is now 49; in 1980, it was only 40.

In 2008, civil aviation institutions were training 8,992 aviation specialists. Graduates numbered 4,395, including 2,015 in higher education and 2,380 in specialized secondary education.

At present, civil aviation educational institutions use a fleet of 233 training aircraft and helicopters.

Preliminary calculations show that the increased number of trained pilots (up to 1,000 annually) require new aviation training equipment, including 190 airplanes, 20 airplane flight simulators, 18 helicopters and five helicopter flight simulators.

The board devoted to the improvement of the staff training system at federal state educational institutions of civil aviation has identified methods for solving the specified problems. These methods include professional training for the period until 2015 and are reflected in the plan of measures aimed at improvement of the existing situation. ■



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The Volga-Dnepr Group: A Russian and Global Leader

The Volga-Dnepr Group has been successfully representing Russian civil aviation in the international air cargo market for nearly 20 years. Today, the Group is the biggest Russian air cargo carrier and the world leader in outsize and heavy air cargo transportation. Volga-Dnepr's group activities are supported by an international team of 2,700 employees located in 16 cities across nine States.

The prestigious aviation cargo provider works closely with ICAO on new safety initiatives and its charter carrier, Volga-Dnepr Airlines, recently received the Baltic Air Charter Association's (BACA's) Excellence Award, the highest prize granted in the Best Cargo Charter Airline category.

The Volga-Dnepr Group's core businesses are air charter transportation using unique AN-124 and IL-76 ramp freighters (Volga-Dnepr Airlines, or VDA), and scheduled all-cargo operations with a growing fleet of Boeing 747s (AirBridgeCargo Airlines). The Group's aircraft fleet consists of ten N-124-100s, six IL-76TDs—including two modified IL-76TD-90VD with advanced engines that are approved for global operations—and seven Boeing 747s.

The combination of complementary charter and scheduled services has ensured the continued growth and development of the Group within the top 20 of the world's leading cargo airlines. Today, Volga-Dnepr is ranked 11th among world cargo airlines in terms of sales volume.

The Volga-Dnepr Group's client base includes government agencies of the world's biggest nations, as well as International Organizations (EC, UN, Red Cross) and leading global corporations, including: The Boeing Company; Embraer; Exxon Mobil; Lockheed Martin; British Petroleum; General Electric; Volkswagen; General Motors; BMW; and many others.



An IL-76TD aircraft undergoes modernization by Volga-Dnepr in order to comply with ICAO requirements. ■

The Group's management also pays special attention to the training and qualification of the company's personnel. In 1997, Volga-Dnepr started Human Factors-based training, recognized as one of the main reasons for accidents in modern aviation. In 1999, VDA was the first Russian air carrier to start CRM training for its personnel and, in 2004, the company established its own aviation training centre, receiving 82 Certificates for different training programmes in its first year.

The company annually participates in training conferences hosted by well-known teaching associations such as the IATEFL, TESOL, and the ICAE globally. Since 2005, the Group's aviation training centre has also been a member of the ATEEL, which brings together different foreign language schools, centers and courses in both Russia and the CIS.

The Volga-Dnepr International Educational Center is currently a highly professional and dynamically-developing institution which annually rates in the Top Three of non-government educational facilities in Russia. The company annually educates over 2000 students.

Volga-Dnepr's own Flight Safety System is based on the requirements set out in ICAO Doc 9422—*Accident Prevention Manual*. The company supports this with its own in-house Flight Safety Management System, implemented with Volga-Dnepr Airlines in 2000 and AirBridgeCargo Airlines in 2007. Following the publication in 2006 of ICAO Doc 9859—*Safety Management Manual*, it became evident that the Group was ahead of its time in developing and introducing basic Flight Safety Components and other associated accident prevention, risk management procedures, etc.

Following recommendations by IATA and ICAO, in 2007 Volga-Dnepr became the first air carrier in Russia and the CIS and only the second cargo airline in the world to pass the IOSA Safety Audit for conformance with new IATA standards. A second Audit in February 2009 reconfirmed the airline's excellent results. ■



NEW INFORMATION TECHNOLOGIES IN AVIATION

Russia, Sankt-Petersburg

COMPANY PROFILE

NITA Company was set up in 1990, and now is one of the well-known Russian companies working in the field of development and production of ATM equipment and software.

NITA offers the full range of services in development, manufacturing, delivery, commissioning, and support of the engineering products. Our products are supplied on a turn-key basis including complete cycle from production till commissioning.

The products developed by NITA have been implemented in more than 200 aviation companies, ATC centers, and training entities of Russia and other countries. Over 100 ATC centers operate automated systems and equipment produced by NITA. The Company employs over 200 specialists.



KEY LINES OF BUSINESS

- ATM and display systems for airfield, terminal and en route centers
- Systems for processing and transmitting of radar data, direction finding, voice and control information
- Flight data processing systems
- Voice and radar data digital recording systems
- ADS-B equipment and monitoring systems
- Synthetic ATC simulators and flight simulators
- Precise timing systems
- Controller consoles and workstations
- Mobile control facilities



ADVANCED TECHNOLOGIES

NITA is in constant process of research and development for the CNS/ATM ICAO advanced technologies such as ADS-B mode 4 and 1090 ES, and now is working on the development of Local Control and Correction Station (LCCS) of GBAS.

Today NITA is an active participant of federal task programs for modernization of ATM system in Russia.





ICAO Colloquium on Aviation and Climate Change



Image selected from the ICAO drawing contest. Children and dependants of ICAO employees were invited to submit drawings on the theme of **Aviation in a Green Environment**.

ICAO invites you to attend, sponsor and/or exhibit at its upcoming:

Colloquium on Aviation and Climate Change 11-14 May, 2010, ICAO Headquarters, Montreal

The Colloquium will focus on current strategies and programmes being employed by ICAO, industry participants, academic/research institutions and other international organizations to harness new technological, scientific and economic solutions in the global fight against climate change. The event will prepare ICAO Member States for their environment-related discussions and high-level decisions to be made at the 37th ICAO Assembly in September 2010.

This special event will provide a unique forum on aviation and climate change, in particular on recent key developments that have emerged from:

- **The ICAO High-level Meeting on International Aviation and Climate Change**
- **ICAO's Conference on Aviation and Alternative Fuels**
- **UNFCCC COP/15**
- **Eighth Meeting of ICAO's Committee for Aviation Environmental Protection (CAEP)**

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