REGIONAL REPORT

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INTERNATIONAL CIVIL AVIATION ORGANIZATION

A New Era of Effective Cooperation

European stakeholders enthusiastically welcome the ICAO Council's new Policy on Regional Cooperation, highlighting the long-standing EUR/NAT collaborative approach to the implementation of effective civil aviation solutions

Special State Profile Focus: NORDICAO

EUR/NAT Regional Report


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EUR/NAT REGIONAL REPORT – 2010

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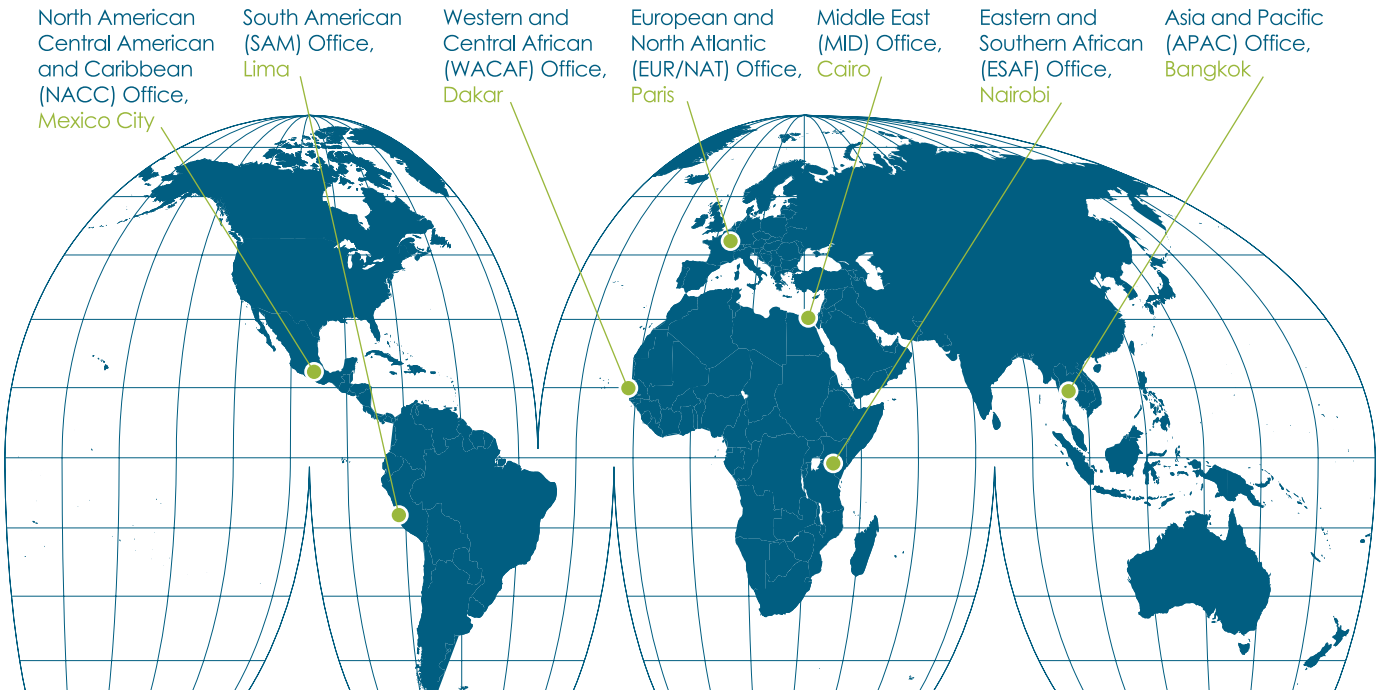

Message From the Regional Director

Dear Reader,

A warm welcome to this special edition of the *ICAO Regional Report*, focusing on the activities of the ICAO European and North Atlantic (EUR/NAT) Regional Office in Paris.

The renewed focus now being placed on Regional and sub-Regional activities is very timely. In October 2009, the Council of ICAO put into action the Organization's new Policy on Regional Cooperation, with the following main objectives:

1. To strengthen cooperation between ICAO, Regional civil aviation bodies and Regional organizations.
2. To ensure adequate expertise and resources are available for aviation infrastructure and for carrying out oversight functions.
3. To more effectively share information and data.
4. To ensure adequate infrastructure and personnel for specialized training requirements.
5. To ensure expertise in the development of State/ Regional plans.
6. To enact suitable civil aviation legislation as and when required.

CONTRACTING STATES TO WHICH THE EUROPEAN AND NORTH ATLANTIC OFFICE IS ACCREDITED

- Albania
- Algeria
- Andorra
- Armenia
- Austria
- Azerbaijan
- Belarus
- Belgium
- Bosnia and Herzegovina
- Bulgaria
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Georgia
- Germany
- Greece
- Hungary
- Iceland
- Ireland
- Israel
- Italy
- Kazakhstan
- Kyrgyzstan
- Latvia
- Lithuania
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- Morocco
- Netherlands
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- Poland
- Portugal
- Republic of Moldova
- Romania
- Russian Federation
- San Marino
- Serbia
- Slovakia
- Slovenia
- Spain
- Sweden
- Switzerland
- Tajikistan
- The former Yugoslav Republic of Macedonia
- Tunisia
- Turkey
- Turkmenistan
- Ukraine
- United Kingdom
- Uzbekistan

The ICAO EUR/NAT Office is accredited to 56 States, covering a vast geographic area. Cooperation in the European Region between ICAO and Regional/sub-Regional organizations and bodies, as well as groupings of States, is a longstanding tradition. Accordingly, European States have enthusiastically welcomed the Council decision on the new Policy on Regional Cooperation, as this is seen as a confirmation and a further strengthening of the Region's existing practices and objectives.

It is with that in mind that representatives of Regional organizations and bodies, as well as representatives of individual States, have chosen to use the opportunity represented by this special *Report* to provide information about their activities in the EUR and NAT Regions.

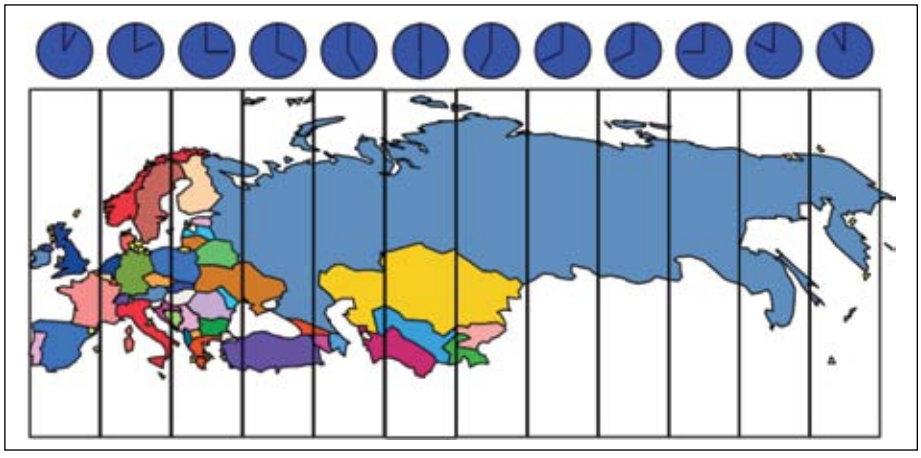
First and foremost, the Chairman of the European Air Navigation Planning Group (EANPG) presents his views on the challenges that we are facing vis-à-vis Regional development towards global harmonization. Readers will also find interesting information about the ongoing project to implement Reduced Vertical Separation Minimum (RVSM) in Eurasia under the leadership of the Russian Federation, as well as details on recent efforts by the European Union Member States to strengthen their legislative and regulatory functions in accordance with the second package of Single European Sky regulations.

These, however, are merely a few examples of the important news and analysis that are available to you in the following pages. Other subjects that are covered here include:

- Implementation updates regarding Safety Management Systems (SMS) and State Safety Programmes (SSPs).
- The development of volcanic ash contingency plans.
- Efforts to implement new ICAO Language Proficiency requirements for pilots and air traffic controllers.
- National considerations concerning the implementation of Performance Based Navigation (PBN) in accordance with Regional and global plans.
- And last but not least, the varying involvements of an individual State in different Regional and sub-Regional work programmes.

It should be noted that ICAO has not exercised any kind of 'censorship' with regard to the opinions or the visions expressed. The scope and substance reflected in all of these submissions present different viewpoints for further discussion, and I am sure that all civil aviation stakeholders will find our EUR/NAT Report to be rewarding and productive reading in this context.

Karsten Theil
ICAO European and
North Atlantic Office
Regional Director ■



A New Decade of Challenges for ICAO in its Regions

Aviation faces many challenges in the near- and long-term, primarily from economic, environmental and security-related sources. Many are now looking to new technological advances in air navigation provision and management, notably the SESAR and NextGen initiatives, as significant components to any proposed solutions.

As Phil Roberts, Director of Airspace Policy in the UK Civil Aviation Authority and Chairman of the European Region Air Navigation Planning Group reports, it is essential that aviation commits now to embracing the culture of change that must be realized so that the promise of SESAR and NextGen can truly deliver on the solutions now being looked for in the EUR Region and beyond.

Phil Roberts is Assistant Director of Airspace Policy in the UK Civil Aviation Authority (UK CAA) and Chairman of the European Region Air Navigation Planning Group (EANPG). He has been active in ATM-related responsibilities for almost 35 years, during which time he has worked as an air traffic controller, airspace manager and airspace regulator. He began his career with the military and for the last 11 years Roberts has served with the UK CAA. He continues to represent the UK in a number of European fora in addition to EUROCONTROL and the EANPG.

As it enters our new decade, the aviation industry finds itself facing some very significant challenges. The biggest of these have emerged as a result of the economic downturn that is now affecting all sectors, with the current consensus being that its ramifications are likely to be long lasting.

Aviation is also under great pressure from two other significant areas: environmental responsibility and more effective security.

On the environmental front, aviation has become the media embodiment of the damage that global warming is causing. Whether this is accurate is irrelevant; the significant increases that we have seen in air travel over the last decade, notwithstanding the setbacks caused by the SARS epidemic and the various Gulf Wars, continues to make the air transport sector a high profile target for environmental groups.

In the security domain, meanwhile, the Christmas Day attempt by a terrorist to blow up a U.S. airliner will inevitably result in further restrictions on passengers and delays at airports, all contributing a much less positive passenger experience than was available just 10 or 20 years ago. What impact this will have on the long term demand for air travel is still unclear.

With respect to air navigation systems and their role in future solutions, we are now at the crossroads of a great period of change. Aviation's future has the potential to be a very bright one indeed, provided SESAR and NextGen can truly deliver on their much-heralded expectations.

Considerable effort has already been expended on both sides of the North Atlantic on these two projects and, as a consequence, they are currently the 'only game in town'. In the absence of a viable *Plan B* and the imperative need to deliver significant change, it is essential that these projects deliver a closely coordinated and effective output. This is especially vital from the EUR Region's perspective, as it lies within an area that features significant traffic flows—some in densely-utilized airspace—which operate in areas covered by both projects and that would be adversely affected by any divergence in operating techniques or requirements.

The EUR Regional Perspective: Global by Nature

The EUR Region extends from Shannon in the West to Vladivostok in the East. In terms of land area and corresponding airspace, this is a very significant territory. In 2009, international air traffic within the EUR Region constituted 56 percent of the global total—though even this figure does not account for overflights that did not originate or terminate within the Region.

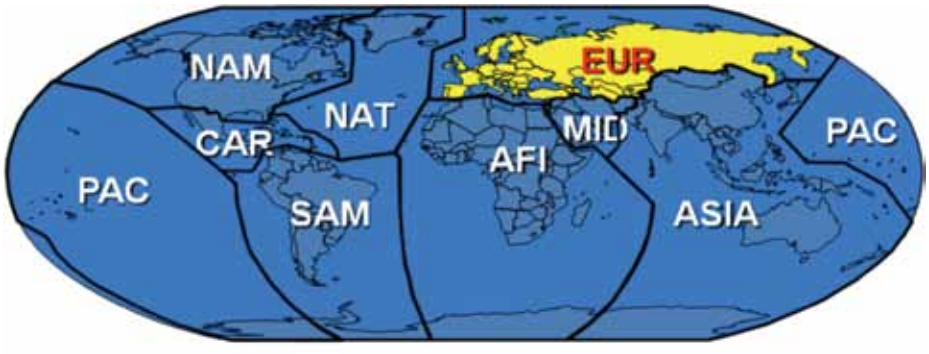
Geographically, the EUR Region—together with its adjacent North Atlantic (NAT), Asia/Pacific (APAC), Middle East (MID) and African (AFI) Regions—lies at a strategic crossroads *(see map, below).* As such, what happens in this combined area affects a very significant proportion of global international traffic and a large number of air carriers.

In 2008, the EUR Region held the 50th Plenary Meeting of the European Air Navigation and Planning Group (EANPG), its planning and implementation Regional group (PIRG). The EANPG has charted a very long and significant series of contributions to the development of CNS/ATM in the EUR Region. Spanning the history of its 50 meetings there have been major changes in air transport in terms of the type and nature of the aircraft being operated, the demand to fly and the basis on which aircraft navigate. Political dimensions have also changed and, in recent decades, the Region has witnessed the end of the Cold War and other periods of conflict which have disrupted air navigation systems from the Balkans to Iraq and Afghanistan.

Throughout all of these challenges and periods of change, the spirit of international co-operation regarding EUR technical air navigation matters has continued in a very effective manner in the EANPG and its various subsidiary bodies. Together, these groups consider all aspects of the air navigation system and community; from meteorology to the radio spectrum as well as all aspects of air transport operations.

It has been extremely rare for technical consensus not to be achieved amongst EUR stakeholders and this has been due in large part to the professionalism and expertise of the many and various representatives from the States, service providers and international organizations who have contributed to the work.

The Region's air navigation accomplishments are also testament to the extremely hard work and dedication of the ICAO EUR/NAT Regional Office personnel, both past and present and from the Regional Director level down, who have worked tirelessly to reach international agreement on many diverse topics.



The European Air Navigation Planning Group during its 51st Meeting, held in Paris at the ICAO EUR/NAT Office premises in December 2009. Seated at the head podium are, from left to right: Karsten Theil (ICAO EUR/NAT Regional Director and Secretary of EANPG Annual Meetings); Phil Roberts (EANPG Chairman); and George Firican (ICAO EUR/NAT Deputy Regional Director).

The Future

While change brings uncertainty it also creates opportunities—and these do not present themselves very often. As such, EUR stakeholders must be prepared to capitalize quickly as new possibilities present themselves.

From my perspective as the Chairman of the EANPG, I believe that there is a chance to go about our business in a manner that reflects the environment that we are likely to face going forward. This means not basking in the reflected glory of our past achievements, but rather using this opportunity to actively embrace change.

For the EANPG to be successful going forward into this next decade, it is my own view that it will be necessary to:

- Ensure that the EUR and the NAT Regions act as one cohesive area. This will require greater cooperation between the two PIRGs (the EANPG and the North Atlantic Systems Planning Group (NAT SPG)) and a more inclusive approach to States in the Eastern part of the EUR Region.
- Work extremely hard to maintain alignment between the SESAR and NextGen initiatives and to ensure that there are no pockets of inconsistency in terms of aircraft equipage or CNS requirements that would adversely affect airspace users.
- Review and, if appropriate, reform the PIRG sub-structure to avoid duplication of effort and any diversity of views between the EANPG and the NAT SPG.
- Ensure that the Regional Office continues to be adequately staffed and resourced with personnel with the right skills and expertise, in order to provide the advice and assistance that States need in order to make their contribution effectively to the network.
- Liaise closely with other international bodies and organizations to eradicate overlap of responsibilities and to define clear lines of communication.

Conclusion

The industry we are part of faces an extremely challenging future; more so now than in any other period in its relatively short history. I remain firmly convinced that the ICAO Regional structure has a considerable contribution to make to aviation's future development, provided we can adapt our methods of working to reflect the changing environment.

This is not a time for old thinking or retrospection; air transport stakeholders today must be more proactive and capable of quickly responding with the decisive actions that will enable them to capitalize more effectively on opportunities and reach new levels of international cooperation and coordination. ■

SES II:
Developing Gate-to-Gate Performance Improvements for Air Transport in Europe

With the adoption of EC Regulation No. 1070/2009 in October 2009, the Single European Sky II (SES II) aviation package amends the existing SES Regulations from 2004 in order to reflect new societal goals such as the improvement of the performance and the sustainability of the European aviation system.

As Luc Tytgat, Head of the Single Sky & Modernisation of Air Traffic Control unit of the European Commission's Directorate-General for Mobility and Transport reports, the SES II provisions build on the achievements of the first SES package—aiming for a truly 'single sky' for the European Region and a high-performance air traffic management infrastructure that will meet the future needs of an evolving aviation industry.

Luc Tytgat is Head of the Single Sky & Modernisation of Air Traffic Control unit of the European Commission's Directorate-General for Mobility and Transport. He is a former Officer in the Belgian Air Force and has done extensive work covering a number of portfolios for the European Commission in addition to his current role. These responsibilities have included work for the EC General Directorate for Transport (1992-2001), the General Directorate for Research (2001-2004), and the General Directorate for Enterprise and Industry (2004-2006).

The four pillars of the SES II package (**performance, safety, technical innovation** (Single European Sky ATM Research, SESAR) and **airports**) should permit a gate-to-gate approach resulting in the performance improvements airspace users and citizens expect from Air Traffic Management (ATM) in the future.

The first pillar of the package introduces **several enhancements to the original SES legislation**, including binding performance targets for air navigation service providers, network management functions established at the European level to ensure convergence between national networks and a definitive date for Member States to improve performance (including an intermediate process of enhanced cross border cooperation) and further integration of air navigation service providers, known as Functional Airspace Blocks (FABs).

The **technological pillar** focuses on introducing state-of-the-art technology. The SESAR programme brings together all aviation stakeholders to develop, validate and deploy a new generation, Europe-wide ATM infrastructure.

The **safety pillar** provides for increased responsibilities for the European Aviation Safety Agency (EASA). This will ensure precise, uniform and binding rules for airport operation, air traffic management and air navigation services, as well as sound oversight of their implementation by Member States. These new EASA competencies provide the European Union agency with more comprehensive control over aviation safety in the European sky, and ensure that common safety rules are applied in all phases of flight, starting from the ground-up.

Finally, the **airport capacity pillar** tackles the shortage of runways and airport facilities, which currently threatens to become a major bottleneck. The initiative seeks to coordinate better airport slots issued to aircraft operators with air traffic management measures, as well as the establishment of an airport capacity observatory to fully integrate airport contributions to the aviation network.

The new package places **environmental issues** at the core of the Single European Sky and improved ATM will help to reduce greenhouse gas emissions from aviation. Prospective improvements of up to 10 percent on average per flight are expected, which amounts to 16 million tonnes of CO_2 savings per year and annual cost savings for airspace users of €2.4 billion. This will put aviation in a position to deal with its integration into the European Emission Trading Scheme.

Given the central human factor in air navigation service provision, the European Union institutions have also adopted a **statement** to declare their willingness to work jointly to involve staff in to the implementation of the aviation package, in order to ensure high standards of competency in all categories of personnel delivering safety-related services and to boost confidence in incident reporting mechanisms.

International Dimension

The liberalization of traffic currently being undertaken between the European Union (EU) and third countries agreements is leading to significant traffic growth to and from the EU. In the field of Air Transport international cooperation is essential. The European Commission (EC) is implementing an overarching policy by which all aspects of air transport (including safety, security, air traffic management and the environment) have to be included in the agreements with third countries in order to ensure the highest safety levels, equal opportunities and a high degree of legislative convergence.

Another essential dimension by which EU neighbouring areas shall be associated to SES is to ensure interoperability between future EU ATM systems, equipment and procedures with those of neighbouring EU countries. This approach is based on the idea that it would be highly desirable for the neighbouring countries to the EU to implement, to the highest extent possible, the same set of rules in order to ensure an expedient, sure and smooth transfer of air traffic between the EU and its neighbouring regions.

In light of the modifications and innovations that the gradual application of SES rules will bring about, consistent planning processes in relation to the establishment of FABs and the progressive deployment of SESAR deliverables shall be coordinated between the EC and ICAO due to the foreseeable impact on the ICAO EUR Air Navigation Plan.

Such coordination should reinforce and deepen the already existing institutional cooperation between the EC and ICAO. This is reflected by the participation of the ICAO EUR/NAT Office in the Single European Sky Committee, the reciprocal participation of the EC in the ICAO European Air Navigation Planning Group, and the Office of the EC to ICAO in Montreal.

Given the progressive extension of the SES rules towards a Pan-European regulatory area, the EC has been given a mandate to negotiate a Memorandum of Cooperation with the relevant bodies and forums of ICAO. The objectives of the Memorandum will be to strengthen cooperation and foster greater participation and involvement by each party in the activities and programmes of the other. This includes coordinating programme planning, policies and technical assistance, achieving Regional harmonization, more uniform implementation and application of applicable SARPs and SES legal provisions in countries bound by the EU legislation, and promoting the global interoperability of new technologies and systems.

Building-up the SES External Dimension

The EU is using both multilateral and bilateral agreements for this build-up process.

The European Common Aviation Area (ECAA) is a **multilateral** agreement signed in December 2005 by the Community and nine partners. It is expressly designed as an open framework accessible to European countries which wish to fully integrate into the European aviation family and to fit into the Neighbourhood Policy of the EU. The ECAA commits all its partners to continue harmonizing legislation with EU laws, which should result in equally high standards in terms of safety, security and ATM rules, as well as fairer competition across Europe.

The ISIS Programme is an initiative of the EC and the Regional Cooperation Council (RCC) in support of the European Common Aviation Area (ECAA) agreement. The beneficiary countries are Albania, Bosnia and Herzegovina, Croatia, Montenegro, Serbia, the former Yugoslav Republic of Macedonia, and the United Nations Mission in Kosovo (UNMIK). The Programme is supported politically by ICAO (acting as an observer member within the ISIS Governing Body) and the North-Atlantic Treaty Organisation (NATO).

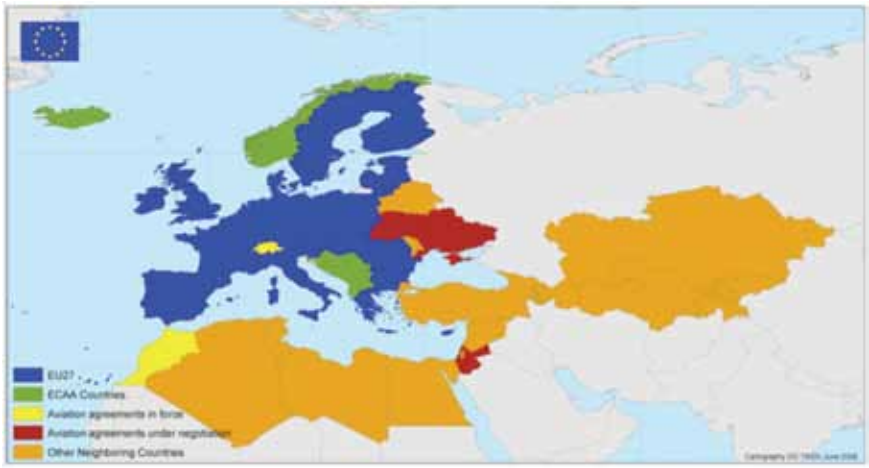
ISIS will help the beneficiary countries to comply with the SES *acquis* contained in the ECAA agreement, primarily by providing national staff with the appropriate know-how and understanding to establish well functioning structures.

Bilateral agreements have been signed with Switzerland and Morocco. All in all there are currently 38 States sharing the Single European Sky (the 27 EU Member States, 9 ECAA partners, plus Switzerland and Morocco).

Ongoing Activities

The EC continues to negotiate comprehensive aviation agreements with neighbouring countries. One of the areas of concern is the Mediterranean, where negotiations are ongoing with Jordan, Lebanon and Israel and are likely to be initiated soon with Tunisia.

Toward a Common Aviation Area



With the purpose of consolidating regulatory convergence on both sides of the Mediterranean, the EC has launched the **Euromed Aviation Project** that will allow, by 2010, the design of specific twinning projects to accelerate these efforts. A second Euromed project will be launched in 2011 to focus on the areas highlighted as a priority for regulatory convergence.

Similar to the SESAR programme, other Regions are also launching modernization programmes. The global interoperability between SESAR, NextGen and other potential Regional programmes has already been discussed at the ICAO level. Currently, the EC is developing, together with the FAA, a Memorandum of Cooperation on R&D for Civil Aviation which is expected to be signed in 2010. **SESAR/NextGen cooperation** is the primary goal for this agreement, however, thanks to its wider scope, it could also address a variety of other concerns such as the impact of air transport on the environment, the development of common performance criteria, safety, UAVs, alternative fuels, suborbital planes, etc.

The EC programming activities are also active in other EU neighbouring areas that belong to the ICAO EUR Region. Reinforced coordination between the EC and ICAO in this regard will indeed maximize these benefits.

In this context, the EC will be launching a Regional programme for regulatory convergence in the Caucasus area, Ukraine and in the Central Asian Republics in 2010. The scope of this support covers all aspects related to civil aviation regulation and oversight, including the areas of licensing and organization of market access, safety, security, ATM and environmental protection. The programme will cover not only the EU *acquis* but also reinforce the ability of national administrations, airport authorities and operators to comply with international ICAO safety and security standards. ■

Developing and Implementing Automated Air Traffic Management in Kazakhstan

The integration of advanced technology into air traffic controller operations is key to ensuring the systematic and purposeful improvement of all Air Traffic Management (ATM) networks.

Kazaeronavigatsia RSE, as Air Navigation Services Provider (ANSP) in the Republic of Kazakhstan, is focused on the ongoing development and implementation of advanced ATM solutions in its airspace. In recent years, Kazaeronavigatsia has helped to migrate the Kazakh upper airspace from 18 autonomous management centres down to four, while simultaneously allowing for more active and flexible approaches to airspace management and increasing system-wide capacity.

All of these improvements have been implemented on a cost-recovery basis and without the need for additional State funding. Kazaeronavigatsia RSE is fully committed to the ongoing adoption of the latest technologies and airspace management techniques as it seeks to continually improve the efficiency and safety of ATM in Kazakhstan.

Airspace Structure of the Republic of Kazakhstan

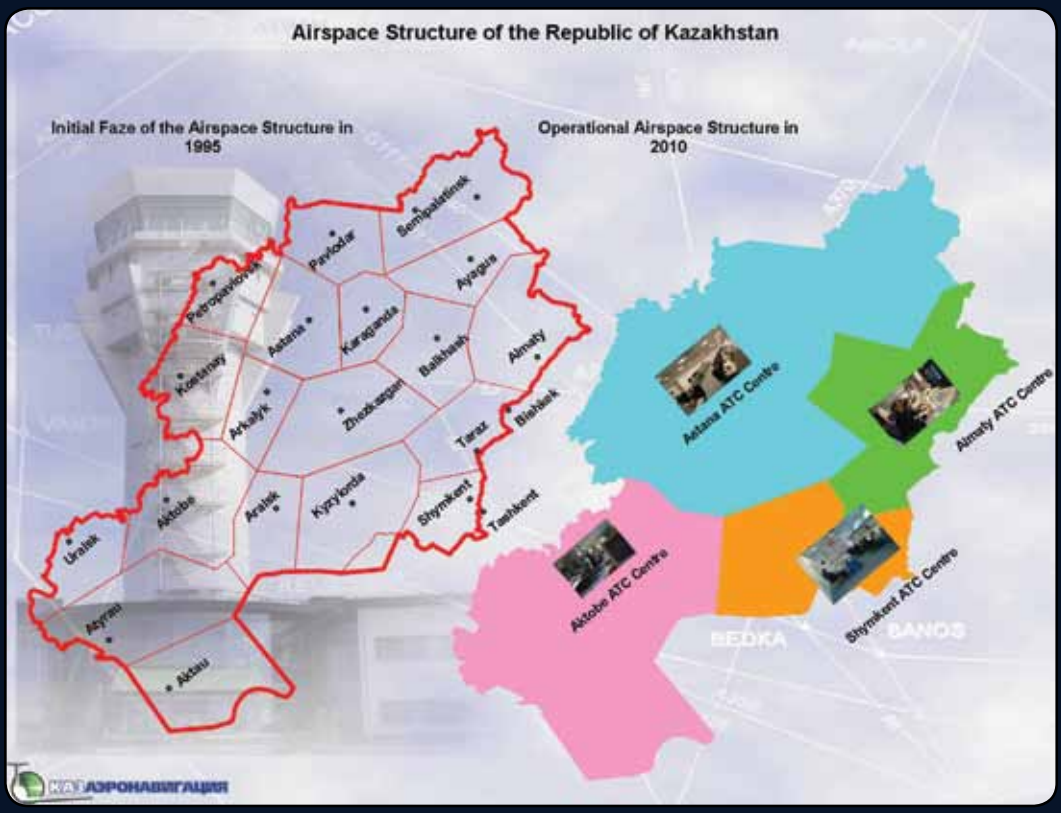
Since its inception in 1995, Kazaeronavigatsia RSE has continually strived to improve the upon the ATM infrastructure and airspace management of Kazakhstan. This has primarily been accomplished through a series of projects and programmes resulting in a new ATM strategy and system whereby 18 airspace management centres have been reduced down to four new facilities:

• ATC Centre in Astana
The largest of the new Kazakh ATM centres, Astana is responsible for no less than 1,200,000 square km of airspace. It contains nine airports, five sectors and 43 air routes stretching over 31,407 km.

• ATC Centre in Aktobe
Operational from June 2009, Aktobe is the newest of the Kazakh centres. It covers 879,098 square km, contains four airports, five sectors and 29 air routes measuring 18,809 km.

• ATC Center in Almaty
Kazakhstan's first new centre, Almaty is responsible for 431,000 square km of airspace. Its 32 air routes span 16,667 km and it is served by four airports.

• ATC Centre in Shymkent
Shymkent covers 317,000 square km of airspace and has been operational since 2006. It has two sectors served by two airports and 36 air routes stretching 9,600 km.



EURASIAN Efforts to Complete RVSM Implementation in the EUR Region

Following upon an ICAO EUR/NAT Regional Office initiative and with the assistance of the Russian Federation, representatives of the Russian Federation, Kazakhstan, Kyrgyzstan, Mongolia, Turkmenistan, Uzbekistan, the Interstate Aviation Committee (IAC) and Belarus met in September 2009 for the first meeting of a new EURASIA RVSM Task Force.

As Aleksander Vedernikov, Deputy Director of the Russian Federal Air Navigation Authority (Rosaeronavigatsia) describes here, respective States and neighbouring Regions, with the ongoing assistance of ICAO, are now moving forward on many fronts toward the implementation of an RVSM framework for their respective airspaces, harmonized with the ICAO Table of Cruising Levels.

Alexander Vedernikov assumed the duties of Deputy Head of the Federal Air Transport Agency of the Ministry of Transport of the Russian Federation in February 2010, after having served as Deputy Head in charge of ANS, ATM/ASM and SAR in the Federal Air Navigation Authority since May 2008. From 1995 to 2008, Vedernikov held various Agency positions including Chief of Navigational Support Division, Deputy Director and Director of the Air Traffic Control Department, as well as Director of Air Navigation Services at Sheremetyevo International Airport. Prior to these postings Vedernikov had held several positions related to air navigation in the Russian Air Force.

Since 1970, the Russian Federation, as the successor to the Soviet Union, has been a Member State of the International Civil Aviation Organization (ICAO).

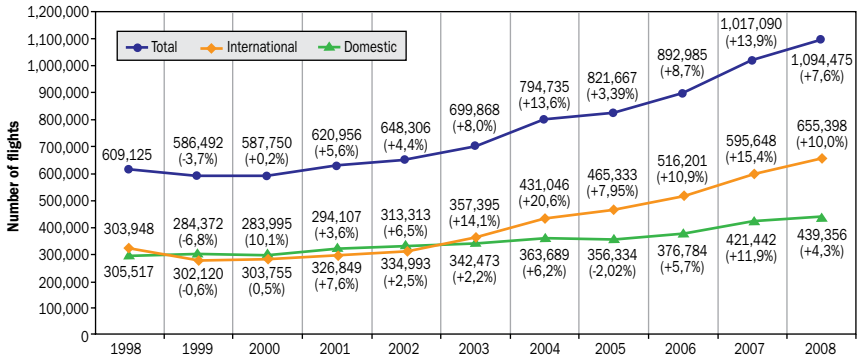
Within the framework of ICAO's activities, the Russian Federation has always been committed to implementing the international civil aviation Standards as reflected in Article 37 of the Chicago Convention of 1944. This is particularly true with regard to vertical separation minima between aircraft.

In the Chicago Convention's Annex 5 *—Units of Measurement to be Used in Air and Ground Operations*, the primary International System of Units (SI) measure assigned for altitude is the metre, while the foot is considered a non-SI alternative permitted only for temporary use within the SI.

Based on the above, as well as on the Russian Federation's traditional legislation stipulating uniformity of measurements, the Russian Federation employs the metric flight level system in its airspace. The system did, however, vary somewhat from the ICAO Table of Cruising Levels, for instance regarding the 500 metre vertical separation from 8,100 to 12,500 metres, the 1,000 metre separation above 12,500 metres, and by virtue of the fact that all its flight levels were divisible by 100. These differences were primarily due to the convenience of the system for national operators despite some adjustments being required for foreign pilots.

Until recently, there was no need to reduce the vertical separation minima due to the vastness of the Russian Federation's airspace (over 25 million km^2). A steady increase in air traffic in recent decades *(see Figure 1, below)*, however, in conjunction with the commitment of the Russian Federation to integrate itself more effectively into the global Air Traffic Management (ATM) system, gave new

Figure 1: Air traffic growth in the Russian Federation (1998-2008)



impetus to intensify more harmonized efforts relating to RVSM implementation.

In addition to these other factors, the Russian Federation has also experienced other positive benefits due to its RVSM implementations. At present, RVSM has been completely achieved in the airspace of the Kaliningrad Flight Information Region (FIR) over the Baltic Sea, while partial RVSM is now in effect in the Rostov-on-Don FIR over the Black sea. Full RVSM implementation in the entire Russian Federation airspace will require much more extensive preparations, however, due to the sheer scale of the 1,000 aircraft, 77 Area Control Centres (ACCs) and over 800 Air Traffic Service (ATS) routes (with a total length of over 575,000 km) that will be affected.

To help address this challenge, in 2006 the Russian Federal Air Navigation Authority (Rosaeronavigatsia) established an Interdepartmental Working Group (IWG) on RVSM implementation in the airspace of the Russian Federation. The IWG drafted proposals for the flight level system and reviewed draft programme and guidance materials on RVSM implementation in the Russian Federation airspace which had been developed by the State Scientific Research Institute (Aeronavigatsia). The IWG also developed RVSM specifications for ATM systems.

The RVSM IWG consulted with colleagues from Belarus in the ICAO EUR/NAT Office and took part in meetings related to RVSM implementation in China which were held in the ICAO Asia-Pacific (APAC) Office.

RVSM Flight Level System Simulations

In December 2008, pursuant to the resolution of the Interdepartmental Group on RVSM Implementation in the Russian Federation, Aeronavigatsia and the Russian State ATM Corporation performed simulations of different flight level systems in the RVSM environment.

During the simulation exercises, the following VSM systems were compared:

Table 1: Russian Federation Vertical Separation System

True track angle – From 000 degrees to 179 degrees						True track angle – From 180 degrees to 359 degrees					
IFR Flights			VFR Flights			IFR Flights			VFR Flights		
FL	Altitude		FL	Altitude		FL	Altitude		FL	Altitude	
	Metres	Feet		Metres	Feet		Metres	Feet		Metres	Feet
50	1500	5000	55	1700	5500	60	1850	6000	65	2000	6500
70	2150	7000	75	2300	7500	80	2450	8000	85	2600	8500
90	2750	9000	95	2900	9500	100	3050	10000	105	3200	10500
110	3350	11000	115	3500	11500	120	3650	12000	125	3800	12500
130	3950	13000	135	4100	13500	140	4250	14000	145	4400	14500
150	4550	15000	155	4700	15500	160	4900	16000	165	5050	16500
170	5200	17000	175	5350	17500	180	5500	18000	185	5650	18500
190	5800	19000	195	5950	19500	200	6100	20000	205	6250	20500
210	6400	21000	215	6550	21500	220	6700	22000	225	6850	22500
230	7000	23000	235	7150	23500	240	7300	24000	245	7450	24500
250	7600	25000	255	7750	25500	260	7900	26000	265	8100	26500
270	8250	27000	275	8400	27500	280	8550	28000	285	8700	28500
290	8850	29000	–	–	–	300	9150	30000	–	–	–
310	9450	31000	–	–	–	320	9750	32000	–	–	–
330	10050	33000	–	–	–	340	10350	34000	–	–	–
350	10650	35000	–	–	–	360	10950	36000	–	–	–
370	11300	37000	–	–	–	380	11600	38000	–	–	–
390	11900	39000	–	–	–	400	12200	40000	–	–	–
410	12500	41000	–	–	–	430	13100	43000	–	–	–
450	13700	45000	–	–	–	470	14350	47000	–	–	–
490	14950	49000	–	–	–	510	15550	51000	–	–	–
Etc.	Etc.	Etc.	–	–	–	Etc.	Etc.	Etc.	–	–	–

Option I:
A flight level system corresponding to the ICAO Table of Cruising Levels published as the ICAO Standard in Annex 2, Appendix 3 to the Chicago Convention. Altitudes were expressed in feet with equivalents in metres. This flight level system is used by the majority of States worldwide.

Option II:
A flight level system with altitudes expressed both in metres and feet. Flights in RVSM airspace were operated at flight levels expressed in feet and located 100 feet higher than the flight levels stipulated by the ICAO Standard. This flight level system is applied in China.

Option III:
A flight level system with altitudes expressed only in metres, featuring: 300 metre vertical separation up to a flight level of 8,400 metres; 500 metre separation between flight levels of 8,400 metres and 8,900 metres; 300 metre separation between 8,900 metres and 12,500 metres; 600 metre separation above 12,500 metres.

Option IV:
A flight level system corresponding to the ICAO Table of Cruising Levels. Altitudes are expressed in metres with equivalents in feet. This flight level system is used in Belarus and the Ukraine.

Option V:
A flight level system with altitudes expressed only in metres up to 8,850 metres and above 12,500 metres (with vertical separations of 300 and 600 metres accordingly). The separation minimum below 8,850 metres is divisible by 100 and in RVSM airspace altitudes are expressed both in metres (divisible by 50) and in feet in accordance with the ICAO Table of Cruising Levels.

The simulations were carried out based on air traffic flow models from the Saint Petersburg ACC at peak period. Furthermore, the following additional scenarios were employed to simulate a particularly complicated ATS environment: increased traffic (up to 40 aircraft per hour); near misses; assigned altitude deviations; and non-compliance with RVSM due to equipment failure.

The following experts were involved in these simulations:

- Operational air traffic controllers experienced in ATS in an RVSM environment.
- Operational air traffic controllers not experienced in ATS in an RVSM environment.
- Representatives of an ATC unit experienced in ATM systems implementation and RVSM operations.
- Representatives of the Moscow ACC who evaluated possible negative impacts of RVSM implementation on ATM/ATS in the most complex airspace of the Joint ATM System of the Russian Federation.
- Pilots experienced in RVSM operations and flight training.

The simulations were performed on the premises of the Saint Petersburg State Civil Aviation University. An updated version of ATC simulator Expert 3 was used as a basis for the simulations. The practical exercises were performed by air traffic controllers from the Saint Petersburg ACC, while scientific support and post-simulation analysis and evaluation were provided by the experts from Aeronavigatsia.

Based on the simulation results, experts from the Russian Ministry of Transport and Rosaeronavigatsia considered it feasible to implement the RVSM system as per the ICAO Table of Cruising Levels. It is important to note that the metre remains the primary unit of altitude measurement in the Russian Federation *(see Table 1, page 13).*

Currently, the following related activities are on-going in the Russian Federation:

- ATM systems upgrading in line with the Federal Target Programme, entitled, *The Joint ATM System Modernization (2009–2015);*
- Personnel training based on internationally-approved RVSM training syllabi.
- Out of the total 968 aircraft which are capable of operating in an RVSM environment and are registered in the Russian Federal Register of civil aircraft, more than half have obtained RVSM approval.
- Implementing aircraft modifications to meet the Minimum Aircraft System Performance Specification (MASPS) required for RVSM approval.

Following upon the ICAO EUR/NAT Regional Office initiative and with the assistance of the Russian Federation, the first meeting of the Task Force on RVSM Implementation in the Eastern part of the ICAO EUR Region was held in Moscow in September 2009. The meeting was attended by representatives of the Russian Federation, Kazakhstan, Kyrgyzstan, Mongolia, Turkmenistan, Uzbekistan, the Interstate Aviation Committee (IAC) and Belarus. The proposal for developing this degree of Regional cooperation between the Eastern States under the ICAO umbrella was first expressed in March 2008 by George Firican, the current Deputy Regional Director of the ICAO EUR/NAT Office.

The EURASIA RVSM Task Force reviewed the current preparatory status, issues regarding the selected RVSM model implementation, RVSM implementation tasks, key milestones and associated timeframes, areas and mechanisms for future cooperation and related priorities.

To promote further work on RVSM implementation, the Task Force established two working groups on ATM and Monitoring chaired by the representatives of the Russian Federation. Task Force States developed a common approach to RVSM implementation in the airspace of the Eastern part of the ICAO EUR Region, with an effective date of November 17, 2011.

The second EURASIA RVSM Task Force meeting was held in Paris in December 2009. The Task Force reviewed at that time the outcomes of the ATM and Monitoring Working Groups meetings and made a number of important decisions, namely:

1. To invite the Russian Federation to begin preparations for the establishment of a EURASIA Regional Monitoring Agency under the auspices of the State Scientific Research Institute, Aeronavigatsia.
2. To establish a EURASIA Project Team on Monitoring to interact with EUR RMA, and to develop a draft monitoring agreement and monitoring agency provisions to be submitted to the ICAO EUR/NAT Office for further dissemination among the States.
3. To invite the Working Group on Monitoring to develop a draft *Action Plan* on RMA establishment.
4. To request the ICAO EUR/NAT Office to invite adjacent States that have already implemented RVSM to participate in ATM Working Group meetings, and initiate coordination with Coalition Forces to involve Afghanistan in the ATM working group activities.

The main objective of the Task Force was to review the EURASIA RVSM Master Plan. The States agreed on the activities, schedule and management structure of the RVSM Programme and, after thorough deliberations, the Master Plan was endorsed by all States concerned.

The Task Force also approved the draft proposal for amendment to the EUR and MID/ASIA Regional Supplementary Procedures (Doc 7030) and invited the Russian Federation to initiate the process of amending Doc 7030 by sending the relevant proposals to ICAO. The Russian Federation agreed to perform this task.

The Russian Federation and other States involved in the EURASIA RVSM implementation project will endeavour to continue to put forward their best efforts in order to successfully complete the related tasks and goals of RVSM implementation in our respective airspaces. ■

Sharing ICAO-compliant Best Practices: Italy's ENAV Volcanic Ash Contingency Plans

Volcanic eruptions can result in the ejection of significant amounts of ash into the atmosphere. The ash is often under such pressure that, as ejected, it can be capable of attaining speeds similar to that of a jet aircraft at cruising speed.

As Massimo Garbini, Managing Director of Italy's ENAV[1] reports, atmospheric volcanic ash ignores all national and international boundaries and represents a unique challenge for regulators, operators and many other aviation stakeholders. He describes here for *Regional Report* readers the mechanisms that ICAO has implemented in the EUR/NAT Region and around the world to create more effective coordination, planning and responses to the volcanic ash challenge, as well as the important role of ENAV in sharing its best practices and in helping to deliver the first Volcanic Ash Awareness Workshop in the EUR Region in June 2009.

[1] ENAV S.p.A. is the Italian Air Navigation Service Provider (ANSP). It is headquartered in Rome and has operating facilities across the Italian national territory.

Massimo Garbini has served as General Manager for ENAV S.p.A. since October 2009. Garbini began his aviation career in the Italian Air Force, serving first as an air traffic controller and later expanding his areas of responsibility to include more advanced ATM operational areas, training and civil/military cooperation. He joined ENAV in 1991 and during his first decade with the Italian ANSP he contributed primarily to the operation of the Rome Area Control Centre. After managing ATC operations at two separate Italian airports beginning in 2002, Garbini was put in charge of ATC operations at all ENAV-controlled facilities in 2005. In 2006 he was named Director of Operations at ENAV and since 2007 he has additionally served as the Operations Control Group Chairman for EUROCONTROL.

The presence of volcanic ash clouds in the atmosphere presents a serious hazard for flight operations due to the clouds' persistence and expanse. As a result, flights must be altered in order to avoid potential and very serious aircraft damage.

Volcanic ash clouds are made up of tiny particles (measuring no more than a few microns) of glass and pulverized rock, as well as a significant volume of silicates. The shape and density of these particles creates an abrasive effect on any surface they impact at high speed (such as an airframe). Furthermore, the particles may also fuse at temperatures lower than an average engine's operating temperature (at cruising speed). Ash clouds are also often accompanied by clouds of gas that can include sulphuric and hydrochloric acid.

Flying through a cloud of volcanic ash can cause serious damage to an aircraft's engines, whether they are of the turbine or turbojet variety. If the exposure is able to persist for long periods, the result can often be a flame-out and complete engine shut-down.

Abrasive effects due to volcanic ash can detrimentally affect all exposed aircraft surfaces, including lights, antennas, antifreeze instruments and the leading edges of wings. The abrasive effect also damages cockpit windows, rendering them opaque and therefore seriously limiting the pilot's view. Ash exposure can also damage important piloting systems, including the speedometer. This can result at times in the complete loss of the instrument and represents a very serious issue for modern aircraft.

Another ash-related danger for aircraft derives from the size of the ash particles themselves. These are small enough to bypass standard filtration systems and then penetrate into air-conditioning systems and electrical compartments. There is even the danger of ash particles contaminating the electrical avionics systems and the hydraulic systems, which handle fuel flow, on board smoke alarms, etc.

To make matters worse, and similarly due to the miniscule size of their particles, ash clouds can neither be detected by onboard nor land-based surveillance and meteorological radar systems. In this regard it becomes urgently necessary to provide flight crews with whatever assistance may be needed in order to safely conduct flight operations.

After serious airframe encounters with volcanic ash between 1982 and 1987, ICAO decided to study the problem and tackle the issue head-on. The research groups which were created initially introduced detailed guidance (Doc 9691) and then important predictive measures based on aeronautical meteorology, which were included in Annex 3.

In order to provide detailed warnings and information regarding volcanic activity for the aeronautical community, ICAO created the International Airways Volcano Watch Operations Group

(IAVWOPSG), which comprises nine Volcanic Ash Advisory Centres (the VAACs) responsible for defined geographic areas around the world. Shortly afterwards Doc 9766 (IAVW Handbook) was published, containing the procedures and detailed indications for the operation of the VAACs.

Due to increases in air traffic, ICAO has concluded that the current system, based on the spreading of warnings and information as well as pilots having the responsibility to decide how to proceed in the presence of volcanic ash clouds, was no longer sufficient. It was therefore decided to introduce *Volcanic Ash Contingency Plans* for both the European (EUR) and North Atlantic (NAT) Regions, following the NAT IMG and EANPG COG meetings in 2004.

These guidelines, which are subject to continuous review, outline the ATM procedures which Member States must adopt as part of their national volcanic ash contingency plans. One element in particular, which is now pending, prescribes that all flights through areas contaminated by clouds of volcanic ash should be completely prohibited.

Volcanic ash in the atmosphere ignores national and international boundaries. For this reason ICAO's volcanic ash contingency plans are applicable even to those States that do not have volcanoes within their borders. States that do have active volcanoes within their territories, such as Italy, have an even greater responsibility to ensure that guidelines are followed and contingency measures adopted, not just for the safety of planes in their own airspace but also to permit neighbouring States to adopt adequate safety measures when volcanic clouds are present. The failure of a single State to adopt appropriate planning and response guidelines would possibly create a cascading effect of contingency failures within neighbouring States.

The contingency procedures, as demonstrated by the ICAO EUR and NAT volcanic ash contingency plans, are complex and require effective coordination by diverse subjects and institutions. Area Control Centres (ACCs), Meteorological Watch Offices (MWOs), ATFCM units, NOTAM offices, aircraft operators, the appointed Volcanic Ash Advisory Centres (VAACs) and the Volcanic Observatories, all have a role to play in the effective communication of safety-related advisories such as VARs (Volcanic Activity Reports), AIREP Special, SIGMETs, NOTAMs and ASHTAMs, Volcanic Ash Advisories (VAAs) and Volcanic Ash Graphics (VAGs), as well as the ATFCM Information Messages (AIM).

Fortunately, volcanic eruptions and their resulting dispersals of ash into the atmosphere are not very frequent in the EUR and NAT Regions. Nevertheless, practice drills must be performed periodically to ensure that contingency measures have been adopted correctly. As ICAO has pointed out:

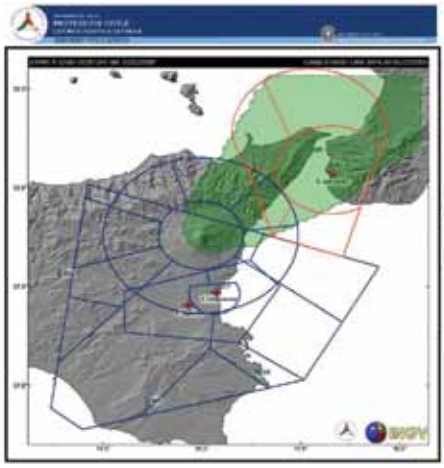
> *"Given the safety and economic implications of volcanic ash to aircraft operations, it is necessary to maintain the ICAO International Airways Volcano Watch in much the same way that the aerodrome fire services are maintained: in constant readiness but with the fervent hope that it rarely has to be activated."*

In 2008, after the necessity to spread knowledge about ash problems for flights had been confirmed, as well as the need to create an organized system of periodic international exercises aimed at testing the application and validity of contingency plans on Regional levels EUR and NAT, the Volcanic Ash Exercises Steering Group (VOLCEX-SG) was created. The Steering Group is composed of ICAO, IATA and EUROCONTROL CFMU experts, as well as skilled personnel from the London and Toulouse VAACs and the Icelandic, Portuguese and Italian ANSPs. The Steering Group has established a rolling, two-year programme of Regional volcanic ash exercises and awareness workshops.

The Italian ANSP, ENAV, is appropriately very active in this sector at the international level and through the two ENAV experts who participate in the ICAO VOLCEX/SG. Building upon its contributions and responsibilities in this regard, ENAV was proud to serve recently as the host of the first Volcanic Ash Awareness Workshop (VAAW) in the EUR Region.

Photo courtesy ENAV SpA.

Forecast Map of Volcanic Ash Spread based on an Eruption of Mt. Etna (Sicily)



Elaborated based on ENAV's input, this Etna ash forecast was created and made available to the Italian ANSP by the Civil Protection Department of the Italian Cabinet with the support of Italy's National Geophysics and Volcanology Institute (INGV).

Moderated by Raul Romero, Secretary of the IAVWOPSG, the inaugural EUR VAAW was held in June 2009 in Catania, Sicily, and was judged by all to have been a great success. Europe's most important and active volcano, Mount Etna, served as a suggestive and appropriate backdrop to help focus participant attention on the tasks before them. More than a hundred delegates from different States and professions took part, including volcanologists, meteorologists, pilots, air traffic controllers, aeronautical information experts, and many others. This diverse range of assembled experts helped make the workshop a perfect occasion for the sharing of knowledge and experience on volcanic ash and the threats it poses to international aviation.

ENAV was also entrusted with organizing the second EUR/NAT volcanic ash-related meeting of 2009, Exercise VOLCEX09/02. This gathering, held on November 10, 2009, focused its attention on a simulated Mt. Etna eruption and involved eight States from Central and Eastern Europe. ENAV served as exercise Leader throughout the proceedings.

The simulated Mt. Etna scenario tested a five-hour eruption whereby an extensive cloud of volcanic ash was diffused into the atmosphere—affecting the airports of Catania and Reggio Calabria as well as a vast area of airspace, both at low and high altitudes. In January of this year, an Exercise VOLCEX 09/02 debriefing was held at the Rome ACC, wherein the performance of this important set of international emergency procedures was examined in great detail.

The Mt. Etna exercise highlighted how the new contingency measures which have been put in place effectively ensured the safety of operations and execution of most of the potentially-affected scheduled flights. In a test sample of approximately 200 flights in the scenario, 40 were cancelled, 30 were diverted and the remainder were partially late.

In the absence of the contingency measures, extremely dangerous conditions for air navigation would have ensued, leading to many potential and serious problems to aircraft fuselages and, above all, to their engines. Furthermore, domestic and international operators would have had to intervene individually in the cancellation of all flights and many other time- and expense-consuming aspects of the incident.

The ENAV project team is already working on appropriate plans for the training of all staff that will be involved in the implementation of such contingency measures (ATM Managers, Chief Supervisor, Supervisors, ATCOs, FMP Managers, NOF operators, meteorologists, etc.). It is also developing required orders of service covering the duties of the various agencies involved (ACCs, FMPs, APPs, TWRs, NOF, UPM, etc.).

Finally, the ENAV team is actively co-operating with ENAC, the National Institute for Geophysics and Volcanology (INGV), the Department for Civil Protection (DPC), the Aeronautica Militare Italiana (Italian Air Force), as well as airport management companies in Catania and Reggio Calabria in order to create a sophisticated and innovative system of managing air traffic in the airspace and airports in close proximity to Mt. Etna in case of a volcanic eruption.

The system is based on the continually-updated availability of precise maps forecasting the dispersion of volcanic ash. The maps are based on complex mathematical algorithms which simulate the trajectory of millions of ash particles, taking into consideration the wind predictions made by other sophisticated meteorological provisions.

In the event of an eruption, these forecast maps immediately replace other maps for the corresponding sector of airspace on the radar screens of Catania's and Reggio's APPs, allowing the ATCOs to lead aircraft out of the contaminated area immediately and contributing in an effective and efficient way to maintaining the safety of operations.

Furthermore, the forecast maps will also allow airport managers to rapidly organize themselves in order to guarantee the safety of all ground operations at airports. ■

One to Go

In 2003, ICAO decided to implement strengthened Language Proficiency Requirements (LPRs), a unique challenge for the Organization's 190 Contracting States. All pilots, controllers and aeronautical station operators are now required to demonstrate Level 4 (Operational) proficiency in the English language used for air-ground radio communications.

With the 2011 deadline now approaching for the new LPRs to be globally implemented, Sergey Melnichenko, Deputy Director of the CompLang Aviation Training Center (Moscow), and Philip Shawcross, President of the International Civil Aviation English Association, note here that State and industry interest in determining effective Aviation English training methodologies and testing techniques still remains strong.

Sergey Melnichenko is the Deputy Director of the CompLang Aviation Training Center in Moscow. He has provided language assistance at more than 50 ICAO events and participated in the ICAO Proficiency Requirements Study Group (PRICESG) representing the Russian Federation. He is an active member of the ICAO EUR/NAT Training Task Force. Melnichenko has written extensively on Aviation English and RTF and is the developer and project manager of the Test of English Language Level for Controllers and Pilots (TELLCAP). Lately he has been overseeing translation of "AeroSafety World", a journal of the Flight Safety Foundation, taking on the role of Editor-in-Chief of its Russian edition.

Philip Shawcross is President of the ICAEA (International Civil Aviation English Association), an inter-professional association founded in 1991. While working for Airbus during the 1970s and later many other airlines and training centres, Shawcross has developed and delivered classroom, CBT and on-line aviation English training materials. He also has many years of experience performing language audits. Since 2003, Shawcross has provided helpful advice and important contributions to ICAO's Level 4 Language Proficiency implementation initiative.

The Training Task Force that acts under the European Air Navigation Planning Group (EANPG) unites English language training and testing professionals and provides them with a forum where they can share their experience with regulators, airlines, Air Navigation Service Providers (ANSPs) and training institutions in the EUR Region.

Updating of the Recommended Actions Plan has always been a priority for the Task Force, and its current version of the Plan is available on the ICAO EUR/NAT Web site. The *Plan* specifies the measures to be taken by the States, airline operators and ANSPs, highlights probable social and financial implications for training stakeholders, and defines appropriate dates and responsible bodies.

To keep closer contact with all stakeholders, ICAO EUR/NAT has launched and participated in Regional Language Proficiency Requirements Implementation Workshops in Brussels, Moscow, Langen, Minsk, Paris, Kiev, Baku, Ulyanovsk, Almaty and Rome. It has become obvious in the course of these Workshops that different countries have encountered various problems with respect to related training, testing, regulating, and financing issues. Nevertheless, each workshop has become a logical step in the formation of a more harmonized understanding of the ICAO Scale, regulator activities, communicative training methodologies, acceptable approaches in testing, and requirements to raters.

Five to seven years ago, the majority of pilots and controllers in non-native English speaking countries were at ICAO Level 2. These personnel have been asked to climb two levels in a relatively short period of time to become proficient speakers. It is not a secret, however, that language, if not used regularly, gradually degrades—faster with lower-level speakers, slower with those who have a relatively good command of the language.

For aviators, there is a certain trap in the ICAO LPRs. On the one hand, controllers and pilots need to be able to demonstrate the required proficiency level only in situations where standard phraseology does not suffice. On the other hand, there is also a standard stating that: *"communications shall be concise and unambiguous, using standard phraseology whenever available".*

Any inability to be able to use their newly-acquired language can lead to communicative degradation in pilots and controllers over a much shorter timeframe than is currently planned for. Without regular English practice, Level 4 speakers can fall to Level 3 much faster than after three years, when ICAO now recommends they attend a refresher course. An airline in Kazakhstan, for example, now requires their flying staff to re-establish their language proficiency on an annual basis—likely a more effective and realistic requirement than the three year timetable presently stipulated.

But there is another side of the English proficiency coin that is very rarely referred to. The ICAO language proficiency requirements apply to native and non-native speakers alike, with ICAO Doc 9835—*Manual on the Implementation of ICAO Language Proficiency Requirements*, stating that: *"it is vital that both native and non-native speakers conform to ICAO standardized phraseology that has been so carefully and painstakingly developed over the last fifty years".*

Unfortunately, recent language proficiency incidents indicate that the quotation noted above is not the case in the field. In one example, a native-speaking controller tried to help pilots who had lost their navigation instruments in a dense traffic environment using plain and verbose language instead of standard phraseology. As a result, the pilots became confused and disoriented, but the controller's contribution to their confusion did not keep various aviation and media sources from laying the blame exclusively on the crew.

To cite another example, the speech tempo used by the crew of US Airways Flight 1549 over the Hudson in January 2009 would likely be too fast even for a Level 4 controller. The recording of Captain Sullenberger's decision to ditch demonstrates a speech tempo that is close to the edge of understanding even for native English speakers of the language. This is precisely why the

EUR/NAT: MOVING TOWARDS LANGUAGE PROFICIENCY

The new focus on plain English in an operational context, introduced by the ICAO Language Proficiency Requirements (LPRs) in March 2003, has been a steep learning curve for both the aviation community and language professionals. To bring LPR implementation onto the radar and develop awareness of the issues involved, ICAO has initiated a large number of concerted measures, several of which have been pioneered by the EUR/NAT Regional Office. Among these measures are:

- The work of the EANPG Programme Coordinating Group (CPG) Training Task Force since 1999.
- Several PRICESG members presenting and taking part in the discussions at the 8th ICAEA seminar in Warsaw in 2002.
- Two international LPR symposia in Montreal in 2004 and 2007.
- The 2004 publication of: Doc 9835—*Manual on the Implementation of ICAO Language Proficiency Requirements*; Circular 318 (*Language Testing for Global Harmonisation*—2009) and Circular 323 (*Guidelines for Aviation English Training Programmes*—2009) developed in collaboration by the ICAEA and ICAO.
- LPR workshops organized by the EUR/NAT Regional Director (Baku, Paris, Langen, Almaty, Ulyanovsk, Rome).
- First Edition of the Speech Sample Training Aid CD (2006).
- Assembly Resolution A36-11, defining the conditions of LPR implementation (2007) in the period running up to March 2011 and the Recommended ICAO European Region Action Plan for language proficiency requirement implementation.
- Participation in the ICAEA's 8th and 9th forums on aviation English training and assessment in Cambridge and Warsaw respectively (2007, 2008).
- A joint ICAO-ICAEA project to create a much-enhanced 2nd Edition of the Speech Sample Training Aid (See www.icaea.pansa.pl).

controller missed the first report and had to be assisted by another Flight 1549 crew member with the second. It is somewhat doubtful whether the same result would have occurred in a non-English-speaking country and ATC environment.

"Artificial" slowness, a suggested technique when communicating with foreign crews, can also be problematic. Even a down-tempo spoken English rate of 200 words per minute used by native-speaking ATC staff can leave foreign pilots guessing about the position and intentions of other aircraft and crews. This is similar to what native speakers feel in non-native-speaking countries when native language is used in communications together with English.

A notorious controller from a major Northern American airport has become a hero on the Internet and in TV reports, not for his knowledge of standard words and phrases, but for sarcasm and needless abuse when communicating with foreign pilots. Using *"cleared"* in situations where it should have been avoided, he was frustrated that *"nobody could speak English"* in the foreign crew. When either the pilot or controller resorts to 'chipping' in the air, they are merely reflecting their emotional immaturity.

The ICAO EUR/NAT office has always underlined the importance of open discussions of problems that States may encounter during the Level 4 implementation process. The Regional Director actively participates in all LPR implementation workshops and the office continues to seek out new opportunities to assist States in the EUR Region. The International Civil Aviation English Association (ICAEA) that unites Aviation English researchers, training programs developers, raters and teachers, has also become an observer at the Training Task Force meetings.

Radio communication in English is not a one-way street. The better we manage to employ standardized English phraseology in aviation, the easier we will understand each other.

After all, it is not only about the language being used; it is really about safety. ■

Courtesy of ENAV S.p.A.

Building a Bridge Between SMS and SSP: Development of the Dutch State Safety Programme

ICAO requires its Member States to have a State Safety Programme (SSP) consisting of an integrated set of regulations and specific activities aimed at improving safety and the establishment of a national Acceptable Level of Safety (ALoS).

Maarten van der Meide, Policy Advisor at the Dutch Directorate-General for Civil Aviation and Maritime Affairs, describes how the establishment of an effective SSP in the Netherlands is currently moving forward.

Maarten van der Meide joined the Dutch Ministry of Transport's, Directorate for Freight Transport in 2002. He has been working as a policy advisor in the field of safety and security and recently for the Directorate for Civil Aviation.

In September 2009, ICAO instructors Richard Macfarlane and Victor Kourenkov conducted a SSP implementation course in the Netherlands. I wish to take the opportunity of this article submission to thank ICAO again for providing this instructive course.

In part with the help of assistance such as this from ICAO, the Dutch Ministry of Transport is moving forward steadily in the establishment of a full-fledged SSP. The Netherlands already has, in large measure, a mature SSP in place, and it is steadily moving forward to a more complete system.

On the governmental side, the Dutch DGCA and CAA are cooperating closely in the development of the new State programme. It is understood clearly by all Dutch stakeholders that a mature and effective SSP will require a committed and continuous improvement process.

Courtesy of
Robert M. Berger

In order to manage safety at the national level, the Dutch Ministry of Transport requires that all aviation service providers implement a Safety Management System (SMS), subject to the acceptance and oversight of the appropriate State authority. In our view it is also important to involve the service providers in the establishment of the SSP, in order to build and maintain a 'bridge' between SSP and SMS activities and objectives.

In light of the different sizes and circumstances of the participating service providers, as well as development stages of their respective Systems, focus is being placed on tailored implementations and flexibility in the management provisions for providers' SMS efforts. One of the biggest challenges in establishing a SMS is to ensure its key elements are integrated into the routine of the business—rather than simply incorporated as an afterthought.

This new safety management approach and a broader exchange of safety information will bring about changes in the way regulators discharge their safety oversight responsibilities. The Netherlands endorses ICAO's ambition to shift from the traditional focus on legal, compliance-based control to more efficiency- (for government and industry) and effectiveness- (better incentives) based performance management.

In our view, safety performance is not simply a matter of reducing the number of accidents. Purely accidental factors and evolving circumstances contaminate the validity of accident data alone as a measure of the performance of a given safety system. For example, an increased bird strike ratio can be caused by an unforeseeable increase in winter visitors due to higher temperatures, something an aerodrome operator or airline has no control over.

This is the reason the Netherlands defines performance as the effectiveness of the process and the systems of the individual service provider's SMS and the State's SSP. To measure this effectiveness we need data about hazards, incidents and accidents—not to link scores to this data but to identify flaws and weaknesses in the processes and systems that create the results. We subsequently address the hazards by implementing all the suitable technological, procedural, operational and organizational defenses available to prevent potentialities from becoming undesirable outcomes.

To stimulate performance-based management, it is very important that existing and new legislation support the shift to performance-based control. As a standard-setting body, ICAO has an important role to fulfil and the Netherlands welcomes the Organization's efforts to encourage performance-based systems. We would welcome other EU countries—especially those who have achieved high safety levels—to support this development as well.

To summarize, although the Dutch Ministry of Transport is responsible for drawing up its State Safety Programme, we are also working closely with industry stakeholders to achieve a solid and broad-based programme. Preliminary Dutch SSP development will have been completed in the first quarter of 2010, after which point it will be continuously updated and revised to accommodate new insights and circumstances.

We consider the move to performance-based control as an essential move towards a safer civil aviation future. The Netherlands looks forward to working with the industry and our European and international partners to help make this goal a reality. ■

SMS in Romania with the Support of ICAO EUR/NAT

Within the Romanian aviation operational and regulatory environment, considerable interest and effort has been applied in recent years regarding the implementation of new safety management concepts and programmes, applicable across the State's entire air transport sector.

As Claudia Virlan, Director General of Romania's Civil Aviation Authority reports, her State will be building throughout 2010 on the success of the special High-level Safety Meeting which Romania hosted in 2009, seeking more Regionally-oriented safety solutions and harmonizing these objectives with ICAO's latest performance-based recommendations.

Claudia Virlan, a physicist with specialization in aviation meteorology, joined the Romanian Civil Aviation Authority (CAA) in 1995 and has been primarily responsible for the oversight of the implementation of ICAO Annex 3 Standards and Recommended Practices. After holding several positions in the personnel licensing and safety domains, Virlan took on the responsibilities of Air Navigation Services Supervision Director in 2007. Recently she was appointed as the new Director General of the Romanian CAA.

With applicable Standards and Recommended Practices (SARPs) having been recently introduced into several Annexes to the Chicago Convention, measures have been taken in Romania to ensure that operators and service providers implement effective Safety Management Systems (SMS).

Compliance with these new SARPs represents the primary objective within the current context of civil aviation safety in Romania. In line with additional efficiency provisions recently proposed by ICAO, our State has clearly established that it will become essential in the next stages to complement the current Romanian regulatory approach to safety management with the Organization's new performance-based recommendations.

Building on the Success of the 2009 High-level Safety Meeting

2009 was an important year for Romania with respect to highlighting the commitment of our national authorities to the implementation of newer safety concepts within the civil aviation field. One of the most significant initiatives taken by the Romanian Government in this regard was the High-level Safety Meeting held in Bucharest in April 2009. This major event was honoured by and benefitted from the participation of Raymond Benjamin, Secretary General of ICAO; Nancy Graham, Director of the ICAO Air Navigation Bureau; Mohammed Elamiri, ICAO Chief, Safety and Security Audits; and Miguel Ramos, ICAO Technical Officer, ISM.

Besides the Directors General of Civil Aviation (DGCAs) from the Central European Rotational Group (CERG) Member States who were present at the event, the Romanian High-level Safety Meeting was also attended by the EC Directorate General for Mobility and Transport/Air Transport Directorate, the European Aviation Safety Agency (EASA), as well as EUROCONTROL.

Representatives from applicable air operators, Air Navigation Service Providers (ANSPs), airports and training organizations (approximately 80 participants in total) debated issues at the High-level Safety Meeting related to SMS/State Safety Programme (SSP) implementation challenges, how aviation service providers can ensure appropriate levels of safety, as well as issues related to post-2010 ICAO Universal Safety Oversight Audit Programme (USOAP) results. All concluded that current safety initiatives would be more efficient if applied at a wider Regional level.

The capacity of Romanian civil aviation to overcome any safety-related challenges was evaluated through the ICAO USOAP audit mission performed last year. The audit first and foremost addresses government compliance with applicable ICAO SARPs and, in light of its exclusive focus on safety issues, its results will help Romania to improve overall flight safety, to avoid possible accidents and to offer assurances to global aviation that a safety environment and safety culture prevails in all aviation activities at the national level.

The preparatory work for this audit began several months earlier, with careful scrutiny being applied to every requirement and regulation at the national level. At the request of the Romanian CAA, the ICAO EUR/NAT Office provided our State with prompt and significant support in assimilating the audit protocols and identifying the proper information that was required—in support of an effective implementation of the applicable ICAO SARPs into Romania's national civil aviation system.

ICAO EUR/NAT experts also helped to harmonize this process with the views and opinions of RCAA staff throughout the various domains of our air transport sector, with some areas undergoing higher levels of scrutiny for better clarification. Results of the audit mission are expected in the near-term and, after development of a suitable action plan, work will begin on implementing required corrective measures.

Romania is clear that the human resource is the central element requiring change in order to effectively re-structure the safety environment towards achievable goals. Sustained efforts have therefore been made to perform and complete specific training on SMS applicable to ANSPs (Annex 11), aerodrome operators (Annex 14, Volume 1) and aircraft operators (Annex 6, Parts I and III). Through the EUR/NAT Paris Office, several SMS courses were organized providing Romanian staff with the necessary related training. During those training sessions, Romanian experts in various fields of aviation were able to establish closer, more effective relationships with stakeholders from other European States and organizations and exchange valuable information.

Two additional training sessions were held in 2009 in Bucharest, on ICAO SMS and SSP implementation respectively. Attendees to these events benefitted from the highly specialized instructors sent by ICAO from its Headquarters in Montreal. Taking advantage of this support received from both ICAO and the Romanian representation to the ICAO Council, State experts achieved qualification as SMS and SSP instructors—a development which will be a great benefit to achieving our future safety-related objectives.

Next Steps

The greatest challenges are still yet to come and our main goal at present is to take more significant steps towards the implementation of an effective SSP. Within the framework of related activities, further training is envisaged to encompass the involvement of the various stakeholders who will be operating and providing air transport-related services while implementing and managing SMS in their organizations. This training will be followed by a series of similar seminars/workshops in more specific domains over the next few years and, as has been the case throughout, all of Romania's best intentions will only be achievable with ICAO support, in particular that of the EUR/NAT Regional Office.

A step-by-step process, featuring effective inter-relationships between oversight authorities and operators/services providers, will be a main focus of near-term Romanian safety performance activities. This progress requires the establishment of a level safety playing field for all aviation stakeholders, with future actions being envisaged on behalf of the RCAA in order to accelerate the level of SMS implementation and ensure appropriate harmonization at all levels of air transport-related activity.

It must be highlighted that all of Romania's efforts to deploy and implement an effective SMS culture and establish a robust safety oversight process have been well worth the effort. Our State has achieved scores of 85 percent in recent EUR Region Safety Maturity Assessments, placing us in the "Continuous Improvement" group as measured by ICAO and EUROCONTROL. ■

View of the final approach in Sion (LSGS). In the background to the left the valley can be seen where the final approach is situated.

A Global Initiative Impacting National Planning

Switzerland is known mainly for its banks, its famous Swiss chocolates and as a very nice place to spend one's time over the winter holidays. With respect to this latter characterization, the first things that come to mind for the average winter enthusiast are the country's dramatic white slopes—blanketed with snow and anticipating skiers.

It's precisely these peaks, however, that make the implementation of instrument flight procedures in Switzerland so challenging. As Thomas Buchanan, Head of International Affairs and Corporate Strategy for Skyguide reports, with the assistance of ICAO and the collaboration of pertinent stakeholders, the topographical challenges that are the glorious Swiss Alps should soon be meeting their PBN match.

Thomas Buchanan is Head of International Affairs and Corporate Strategy for the Swiss ANSP, Skyguide. He served previously within Skyguide as: an ATCO Trainee for the Geneva Tower and Approach Unit; a regulator for the Swiss Federal Office of Civil Aviation (FOCA); and as a manager in the Swiss Instrument Flight Procedure Office, where he was active until moving to the International Relations division in 2007. Buchanan has been Chair of the ICAO Instrument Flight Procedures Panel (IFPP; formerly the ICAO Obstacle Clearance Panel) since 2006 and, in 2008, additionally assumed the Chair of the European PBN Implementation Task Force for the ICAO EUR/NAT Regional office.

Over the last few years, aviation has witnessed a minor revolution in air navigation. In the 'old days', pilots navigated based on equipment only—if your aircraft came with a VHF Omni-directional Radio (VOR) receiver, you would perform a VOR approach; with an Automatic Direction Finder (ADF), Non-Directional Beacon (NDB) approaches were possible.

With the recent roll-out of Area Navigation (RNAV) capability, whether RNAV utilizing Distance Measuring Equipment (RNAV DME/DME) or RNAV based on Global Navigation Satellite System capability (RNAV GNSS), a new era is now upon us. Operations are no longer based on an *"If you have it, you can fly it"* either/or approach. Today, distinct performance-based options have led away from either/or scenarios and provide much more flexibility. In the face of modern navigational challenges, the question for pilots is no longer simply *"Do I have it?"*, but rather *"Which of the capabilities at my command is best-suited to this type of operation?"*

Upon commencing its initiatives related to Performance-based Navigation (PBN) implementation, ICAO charged its Regional Offices to establish specific task forces to manage related responsibilities. The work of the task forces that's required in this regard features a dual focus: paving the way to effective PBN implementation; and addressing the concerns raised in Assembly Resolution (AR) 36-23, recommending the provision of Adjusted Present Value (APV) approaches to all Instrument Flight Rules (IFR) runway ends by 2016.

In the European Region, the participating States focused their work on the regulatory aspects that allow for the transition to PBN. The EUR Task Force identified the need to adapt various documents specific to its Region and has accordingly developed an ICAO EUR PBN Implementation Plan and drafted an amendment to ICAO Regional Supplementary Procedures (SUPPs) Doc 7030. This Doc 7030 amendment provides a clean baseline upon which the transition from European Standards (B-RNAV, P-RNAV) to the new ICAO Standards (RNAV 5, RNAV 1) may be achieved.

The European Air Navigation Planning Group (EANPG), the highest regulatory group in the ICAO European Region, has agreed the proposed changes. They are expected to have limited impact on pre-existing certification material and cross-references will be provided to maintain conformity to already-received approvals.

Some European States are now well-advanced in their GNSS implementation processes. Approach Procedures with Vertical Guidance (APV) are now in the pipeline and are expected to be published this year in various States'

Aerial view of Sion.

Aeronautical Information Publications (AIPs). These procedures are based on both APV Baro-VNAV and APV SBAS LPV approaches. The availability of SBAS LPV in the European Region is presently dependent on the operational availability of the European Geostationary Navigation Overlay System (EGNOS). This availability is foreseen to occur by mid 2010, upon the successful certification of the European Satellite Services Provider (ESSP).

Other States, meanwhile, are still in the process of validating GNSS as mean of navigation. Regulatory issues are currently preventing several EUR Region States from fully deploying PBN and completing their AR 36-23 objectives. This issue has been raised with ICAO and was discussed at the last meeting of the EANPG. A corresponding conclusion was published in the final report of the meeting.

GNSS training and common understanding are other areas where urgent effort is needed. Again, ICAO is being proactive in this regard and will accordingly be hosting a workshop on May 25–27, 2010, where interested stakeholders will be able to discuss possible solutions in more detail.

Switzerland: A Prime Candidate for PBN

The Swiss Instrument Flight Procedures Office, operated by our Air Navigation Service Provider (ANSP), Skyguide, has developed a broad range of knowledge and experience regarding Instrument Flight Procedures (IFP) operations. The process of acquiring this detailed information over the years has benefited significantly from the PANS-OPS criteria found in ICAO Doc 8168.

Skyguide oversees the last two remaining Instrument Guided landing Systems (IGS) that are still published worldwide. The third, and probably best known IGS, was for a period of time the all-too-famous Kai Tak approach to Hong Kong.

The first of the Swiss IGS approaches is located in Sion, in the middle of one of the country's ski regions. The second one is based in Lugano, in the southern part of Switzerland. IGS feature at least one component which is not within the bounds of normal approach criteria. For Sion, the approach angle is 6.0° and the approach terminates some 8 NM before the landing runway. In Lugano meanwhile, the approach angle is a breathtaking 6.65°. It has to be noted that, for both locations, specific pilot training is required.

Although PBN is definitely not limited to the advanced functionalities that RNP APCH AR provides, these two examples clearly illustrate the specificities of the Swiss approach environment.

Presently, additional issues regarding the use of GNSS as the primary guidance tool for IFPs are still pending. It is expected, however, that an agreement will be forged with FOCA and that appropriate planning for GNSS procedure implementation will be developed within the coming months. When it makes this decision it will become possible for the Swiss regulator to fulfill the ICAO requirements as set forth in AR 36-23.

Switzerland currently foresees continuing to implement and abide by the requirements of AR 36-23. It expects to be able to deliver the outlines of its implementation plan during the course of 2010. The plan has been set up on a consultative basis with a lead role having been taken by FOCA. Various Swiss aviation stakeholders (ANSPs, operators, general aviation, airports) are also doing their part by assisting in the development of a nation-wide PBN implementation programme. At present, the program counts some 14 projects organized by airports and operators which feature fixed and rotary wing procedures.

Through this collaborative decision making process a direct buy-in is expected from pertinent aviation stakeholders. The resulting collaboration will be immensely helpful with respect to implementing the planned procedures in the most efficient manner possible.

Work on all these fronts is now underway and Skyguide expects the first PBN procedures to be improving the safety and efficiency of Swiss aviation before the end of 2010. ■

Leadership and Vision in Global Civil Aviation

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The International Civil Aviation Organization

Turkish Civil Aviation and Regional Cooperation

In addition to being a founding Member of ICAO and the European Civil Aviation Conference (ECAC), Turkey has also been an active member of EUROCONTROL since 1989. It regularly contributes to and supports the projects, programmes and activities of these organizations with a special focus on safety, security, the environment and Air Traffic Management (ATM) issues.

As Dr. Ali Ariduru, Turkey's Director General of Civil Aviation highlights in this comprehensive update, Turkey has been significantly broadening the scope of its civil aviation collaborative activities in recent years, spreading its wings into Africa, the Middle East, the Mediterranean and further afield, and bringing an important level of leadership to burgeoning aviation cooperation programmes with the high-level support of the ICAO European Regional Office.

Dr. Ali Ariduru was appointed the Director General of Civil Aviation (DGCA) for Turkey in November 2007, after serving as its Acting DGCA for several months prior. Between 2005 and 2007 he was the Acting Deputy DGCA. Since 2007, Ariduru has also served as a Member of the European Civil Aviation Conference (ECAC) Coordinating Committee and as Chairman to a number of Regional civil aviation organizations.

Aviation is a driving force of economic development and an important indicator of social welfare. The aviation sector is also highly dynamic, advancing rapidly in parallel with globalization and technological developments.

As globalization has continued to transform many fields, in particular transportation, communications, economics and commerce, States have begun to realize the importance of eliminating limitations and obstacles to this ongoing evolution. The global mobility of capital, knowledge and trained labour today has reached unprecedented levels, with every geographic region now accessible to each other, regardless of the distances between them.

Transforming this accessibility into profit is only possible through sustainable relationships that benefit all parties. It is an undeniable fact that aviation contributes tremendously to the development of these important political, commercial and cultural relationships between nations.

Turkey, besides its contributions as a member of the EUROCONTROL Provisional Council Coordinating Committee (EPCCC), also takes an active role contributing to the ECAC Coordinating Committee and serving as a board member of the JAA-TO. Further to all of these cooperative efforts, our State has also taken the lead in the launch and development of a number of initiatives capitalizing on Turkey's instrumental and unique role as a Regional bridge between various States and stakeholders.

This bridging role is essential for European aviation as Turkey has assumed the important task of expanding the European aviation system to other countries in its Region. In this context, for example, Turkey has actively provided training opportunities to member States of Regional organizations such as the D-8[1], TRACECA (Transport Corridor—Europe, Caucasus and Asia) and the TMAG (Turkish Middle East Aviation Group).

Turkish civil aviation continues to develop a civil aviation sector that is capable of carrying passengers to any destination in the world by providing them the safest, most secure and comfortable, as well as environmentally-conscious services. In line with these objectives, Turkey has recently launched a new Regional Air Transportation Project aimed at liberalizing our air transport sector and providing high-quality services to passengers, through a new and more level operational playing field and a more competitive carrier environment.

The Regional Aviation Policy (RAP) Turkey adopted in 2003 has also become one of the most successful projects in its civil aviation history. During the past six years, the RAP has resulted in achievements for Turkish aviation that have gone far beyond the targets set at its onset and which have exceeded all national and international expectations. For example, the RAP target of 55 million passengers/year, originally forecast to be achievable by the year 2015, was actually reached after just two years following the launch of the Project—a full 10 years ahead of schedule. The total number of passengers carried has now reached 85 million.

[1] The D-8, or 'Developing 8' countries includes Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan, and Turkey.

In addition to the ongoing growth trend in its domestic sector, Turkey has attached special importance to being an active and effective participant in the international arena. This includes emphasis on developing closer cooperative frameworks with its Regional neighbours.

Turkey actively contributes to cooperative activities in the aviation field within the Black Sea Economic Cooperation Organisation (BSEC), TRACECA, the African Civil Aviation Commission (AFCAC) and with several Mediterranean countries. Turkey's Civil Aviation Authority (CAA) assumed additional and lead aviation-related roles in organizations such as the D-8 and the TMAG. Agreements encouraging partner countries to enhance cooperation in any sphere of civil aviation can have dramatic results regarding the improvement of maintenance and training levels in the Region. These and related contributions to the development of the global aviation system are very much in line with the objectives of ICAO.

The following is a more detailed look at the cooperative achievements of Turkey in the area of civil aviation. Readers may wish to note that our State has concluded multilateral cooperation agreements with no less than 129 countries since 2007.

1 Cooperation Activities related to Transport Corridor—Europe, Caucasus and Asia (TRACECA)

The Turkish Directorate General of Civil Aviation (DGCA) hosted a meeting in March 2007 in Antalya, Turkey, aimed at establishing and developing regional cooperation among TRACECA member countries regarding civil aviation issues. Participating TRACECA members include Azerbaijan, Bulgaria, Armenia, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Uzbekistan, Romania, Tajikistan, Turkmenistan, Ukraine, Iran, and Turkey.

The TRACECA countries signalled their appreciation and satisfaction at the 2007 Antalya event regarding Turkey's initiatives on civil aviation—which had been somewhat neglected among them in recent years—and also expressed their support for Turkey to maintain its leadership role in the Region.

The meeting concluded by placing renewed emphasis on the need for improved cooperation regarding flight safety, aviation security, rule making activities and legal activities. To this effect, a Memorandum of Understanding was issued covering cooperative frameworks related to surveillance and inspection, certification and licensing, technical and flight training operations, aircraft maintenance and related topics, aeronautical services and ATM, airport infrastructure, as well as terminal and ground services.

2 D-8 Cooperation

The D-8 was founded on June 15, 1997. Participating States include Bangladesh, Indonesia, Iran, Malaysia, Egypt, Nigeria, Pakistan, and Turkey.

The first civil aviation-related D-8 event involved a meeting of the member State DGCAs in June 2007 in Antalya, Turkey. Indonesia, Malaysia, Iran, Bangladesh, Egypt, Nigeria, and Pakistan participated in the meeting.

Civil aviation was introduced into the D-8 countries' cooperative activities via a Memorandum of Understanding signed during a second meeting which was held in Isfahan (Iran) in September 2007. This meeting was led by Turkey and featured the election of our State to the Chairmanship of a D-8 Civil Aviation Working Group for 2008–2010.

The Third Session of this Working Group was held in June 2008 in Indonesia and the D-8 initiative has already started to yield promising outcomes.

3 Mediterranean Regional Cooperation

The First Session of the Civil Aviation Organizations of the Mediterranean Countries was hosted by the Turkish DGCA in Antalya in June 2007. DGCAs from Tunisia, Libya, Syria, Algeria and TRNC participated in the meeting. The Mediterranean group also includes Jordan, Morocco and Lebanon.

Underlining the need for more coordination in civil aviation activities in the Region in order to ensure the best possible contributions to global flight safety, the meeting created a consensus among the participating countries regarding the establishment of a new mechanism for guaranteeing close cooperation and coordination in the civil aviation field.

4 Black Sea Economic Cooperation Organization (BSEC)

The BSEC is made up of Albania, Azerbaijan, Armenia, Bulgaria, Georgia, Moldova, Romania, Russia, Serbia, Ukraine, Greece, and Turkey.

BSEC CAAs came together in Istanbul in February 2008 for a meeting hosted by the Turkish DGCA. This was the first BSEC meeting devoted to developing Regional cooperation regarding civil aviation issues, under the leadership of Turkey. Organized in line with the decision taken during BSEC Ministerial Meeting held in Istanbul in 2007, to include civil aviation in Black Sea region cooperative activities, was of major importance regarding joint action to help reinforce global flight safety.

5 AFCAC Regional Cooperation

A Conference was organized by the Turkish DGCA in June 2009 in Istanbul with the participation of the CAAs from 12 of the 48 AFCAC member States, namely Chad, Ethiopia, Ivory Coast, Gambia, Comoros Union, Mali, Somali, Togo, Tunisia, Uganda, and Zambia.

At the end of the conference, a cooperation agreement was signed with AFCAC States selecting Turkey as a model country regarding efforts aimed at strengthening AFCAC civil aviation systems and air traffic infrastructures.

Within the framework of this agreement, concluded between Turkey and the 48 AFCAC States, the parties agreed to cooperate with regard to navigation services, ATM issues, safety, security, expert exchange and legislative regulations, training opportunities, maintenance and repair services, airport infrastructure, and terminal and ground services.

Furthermore, it was unanimously agreed to have further cooperation in the international arena, including through ICAO, on sharing safety data as well as search and rescue activities, accident investigation and SAFA issues.

6 Turkey Middle East Aviation Group (TMAG) Cooperation

The Turkey Middle East Aviation Group (TMAG) is composed of Jordan, Syria, Lebanon, Iraq, and Turkey. Its first meeting was held in Antalya in May 2009 with the participation of the DGCAs of Lebanon, Syria, Jordan and Turkey. A Memorandum of Understanding was signed and the TMAG nomenclature was officially agreed during this event.

At a second, later meeting held in Istanbul, Iraq was also accepted as a new member. It was also decided to establish the four working groups on safety, security, the environment and ATM and to nominate the representatives of the member States for each group.

A busy schedule in the upcoming months awaits this newly-founded organization that has been formed to promote improved flight safety and security in the region.

7 Regional Safety Oversight Organization (RSOO)

The Regional Safety Oversight Organization (RSOO) is composed of Ukraine, Azerbaijan, Moldova and Turkey. The CAAs from these States, all non-EU members among ECAC member countries, held a meeting in Yalta, Ukraine in August 2008 to determine the way forward after the termination of the JAA (Joint Aviation Authorities).

Participants met under the auspices of a need for improved "Development of Regional Cooperation in Aviation Safety". The RSOO was created in response to this agreed and shared mandate and attending countries met again in October 2008 in Antalya to evaluate in more detail the scope and purpose of the new organization.

An RSOO Regional Safety Council has since been established and it has been decided to continue efforts within the framework of the arrangements agreed among the parties during the last RSOO meeting, held in December 2009. Among the objectives of the RSOO covering the Black Sea and Caspian Sea region, the priority is to assist applicable countries in fulfilling their responsibilities resulting from the Chicago Convention, its Annexes and other guidance.

CAAs from 12 of the 48 AFCAC member States at a conference organized by the Turkish DGCA, in June 2009 in Istanbul.

These objectives included the establishment of legislation fulfilling the requirements of the region and the broader aviation industry, a regional training plan, harmonizing efforts expended in the formation of a safer, more efficient transportation system, and overcoming shortcomings related to national and regional responsibilities. The training of qualified technical personnel, establishment of international expert teams, cooperation on ICAO USOAP and EUROCONTROL ESIMS audits, the training of safety experts, as well as cooperation in the realization of inspection objectives, are among some of the other notable RSOO activities.

ICAO has been informed of the developments achieved under this new regional umbrella and RSOO cooperation is progressively improving on all fronts.

Conclusion

Turkey's primary goal at present is to develop enhanced regional cooperation activities, in compliance with ICAO's strategic objectives and Regional aviation policies, in order to improve current aviation standards and to establish a common aviation system without jeopardizing flight safety and aviation security, as well as agreed environmental objectives.

In line with these priorities, Turkey is now working to finalize Memorandum of Cooperation (MoC) protocols with ICAO. Widening and deepening aviation cooperation will be an important item on the agenda of all Regional organizations' work schedules in the forthcoming period. ■

NORDICAO

State Profile Special Feature

Celebrating the very successful and historic civil aviation cooperation which has been established between Denmark, Iceland, Finland, Norway and Sweden.

A comprehensive look at the exemplary civil aviation frameworks and approaches that have been developed and adhered to by the Nordic States, inclusive of the autonomous regions of Greenland and the Faroe and Åland Islands.

Nordic States At-a-Glance

Denmark is a constitutional monarchy in north western Europe, the southernmost of the Scandinavian countries. Denmark comprises the Jutland peninsula, which extends about 338 km in a north and south direction, as well as numerous islands in the Baltic and North seas. Far to the northwest of Jutland, in the Atlantic Ocean between the Shetland Islands and Iceland, lie the Faroe Islands—a group of 18 islands that are part of Denmark. Near the North American mainland, between the North Atlantic and the Arctic oceans, is the island of Greenland; also an integral part of the Danish Monarchy. Both the Faroe Islands and Greenland are self-governing entities. Denmark has an area of 43,094 km^2 with Copenhagen (København) being the capital and largest city.

Finland is a republic in northern Europe, bordered on the north by Norway, on the east by Russia, on the south by the Gulf of Finland, on the southwest by the Baltic Sea, and on the west by the Gulf of Bothnia and Sweden. The Åland Islands, an autonomous province of Finland, are located at the entrance to the Gulf of Bothnia. Nearly one-third of Finland lies north of the Arctic Circle. The area of Finland, including 33,551 km^2 of inland water, totals 338,145 km^2. Helsinki is the capital and largest city of Finland.

Iceland is an island republic with the oldest legislative parliament—established in the year 930—still in existence. In 1980, Iceland was the first State in the world to elect, in a democratic election, a female president. Iceland is located in the North Atlantic Ocean, approximately 300 km east of Greenland and 1,000 km west of Norway. Iceland covers 103,000 km^2, extending 305 km from north to south and some 485 km from east to west. Iceland is the most sparsely populated country in Europe. It was not until 1974 that the so-called 'ring road' was completed, making it possible to drive around the island. Aviation has therefore played a very important role as a means of public transportation in the latter part of the 20th century. Reykjavík is Iceland's capital and largest city.

QUICKFACTS ON THE NORDIC REGION

- The Nordic region consists of: The Kingdom of Denmark (including the autonomous regions of the Faroe Islands and Greenland); The Republic of Finland (including the autonomous region of Åland Islands); The Republic of Iceland; The Kingdom of Norway; and The Kingdom of Sweden.
- The region's five nation States and three autonomous regions share common history as well as common traits in their respective societies, such as their political systems and the Nordic social model.
- Politically, the Nordic States do not form a common entity. They do co operate, however, in different organizations, including their joint representation to ICAO: *NORDICAO*.
- The Nordic States have a combined population of approximately 25 million inhabitants, spread over a land area of 3.5 million km^2.

Norway is a constitutional monarchy in northern Europe, occupying the western and northern portions of the Scandinavian peninsula. It is bordered on the north by the Barents Sea, an arm of the Arctic Ocean, on the northeast by Finland and Russia, on the east by Sweden, on the south by Skagerrak Strait and the North Sea, and on the west by the Norwegian Sea. The Norwegian coastline extends some 2,740 km. Including all the fjords and offshore islands, the coastline totals approximately 21,930 km. Norway has a land area of 385,639 km^2 and Oslo is the capital and largest city.

Sweden is a constitutional monarchy in northern Europe, occupying the eastern portion of the Scandinavian peninsula. Sweden includes the islands of Gotland and Öland in the Baltic Sea. Sweden's 449,964 km^2 makes it the fourth largest country in Europe. Stockholm is the country's capital and largest city. ■

The Pioneering Spirit of Nordic Aviation

Aviation has been an integral part of the Nordic States' transportation infrastructure for decades. It is the only means of long-distance transport in some of the Arctic parts of the region, where cities and towns are remotely located on a rugged landscape.

Since the 1920s, the transport of goods and passengers has risen steadily in the Nordic countries.

Danish airline DDL was founded in 1918, and national airlines were founded in Sweden and Norway in 1924 and 1927 respectively. In 1946, the three national air carriers united in a joint Scandinavian airline which in 1951 became Scandinavian Airlines System (SAS). SAS was the world's first airline to fly the Copenhagen-Los Angeles polar route in scheduled services in 1954.

Kastrup Airport circa 1950. Three SAS DC-4s, two DC-6s, one Scandia, three DC-3s and one Swissair Convair-liner 240 can be seen on the apron.

The first flight in Iceland took place over Reykjavik in 1919 when an Avro 504 K took off from Reykjavík Airport, located in the centre of the capital. Air Iceland, from which Icelandair traces its roots, was established the same year, well before Iceland's parliament passed its first aviation legislation in 1930. Today, there are 18 AOC holders worldwide with an Icelandic AOC operating 60–70 aircraft with an MTOW of over 10 tonnes.

Finnair, one of the world's oldest continually operating airlines, was founded on November 1, 1923. In recent years, Finnair's strategy has included strengthening the company's position in the Asian market and increasing the number of routes between Europe and Asia.

In Denmark, Kastrup Airport (as Copenhagen Airport was originally called) opened on April 20, 1925. It was the first airport in the world designed exclusively for civil traffic. At the time, there were only a few small hangars and two short runways. Flying was limited to the summer months, since there were no navigational aids. Improved technology allowed for year-round flying in the 1930s and it wasn't long before Copenhagen Airport became the primary connecting point between the Nordic countries and the rest of Europe.

The Nordic region's rich tradition in aviation includes aircraft manufacturing. Early in the 20th century, several experiments with various motor-powered 'flying devices' were carried out. In Denmark, Mr. Jacob Christian Ellehammer, who had previous commercial success with an early motorcycle design, pursued his dream of powered flight. His studies of birds enabled him to calculate the horsepower required to fly and to translate these calculations into his own design of a radial engine.

Unaware of the Wright brothers' successful controlled and manned powered flight in 1903, Ellehammer continued to experiment. On September 12, 1906, he became one of the first Europeans to fly an airplane. His flight of 42 metres at an altitude of 50 centimetres occurred on the tiny island of Lindholm. It was, however, never recognized as a 'free motor powered flight' because the aircraft was tied to a pole in order to keep it flying over the island and prevent it from going astray into the sea.

In the 1920s and 1930s, aircraft production became much more sophisticated. Numerous aircraft were built both for military and civilian purposes in Denmark, Norway, Finland and Sweden—the most well-known of these aircraft manufacturers being SAAB (Svenska Aeroplan Aktiebolaget).

Founded in 1937, SAAB's primary aim was to supply military aircraft in Sweden. Today, SAAB has a military and civilian aircraft production as well as avionics and technical solutions for the global aviation industry. ■

The Douglas DC-6B Arild Viking made history during its delivery flight by departing Los Angeles on November 19, 1952, and landing 28 hours and 6 minutes later in Copenhagen after refuelling stops at Edmonton, Canada and Thule, Greenland. On November 15, 1954, SAS inaugurated its first regular polar route between Copenhagen-Sondre, Stromfjord (Greenland), Winnipeg (Canada) to Los Angeles.

A DC-3 at Lillehammer, Norway. The Norwegian SAS-partner DNL operated a total of 13 DC-3s from 1946 onward.

J.C. Ellehammer became one of the first Europeans to fly an aircraft when he took his invention on its inaugural flight on the island of Lindholm in 1906, propelling it 42 metres at an altitude of 50 centimetres (Photo courtesy of Danish Museum of Science and Technology).

Effective Cooperation to Promote Safety and Efficiency

The Nordic States have successfully created a framework that enables air traffic to operate as safely and efficiently as possible for the benefit of air passengers and society alike.

Whether you travel through the major airports in Copenhagen, Helsinki, Reykjavik (Keflavik), Oslo or Stockholm, or if you go to the more isolated areas in the Nordic region, you will find airports that are in full compliance with the Standards of ICAO. This is also true of the approximately 200 domestic, regional and long-haul airlines serving the region.

Due to the geography and climate of the region, and because of the vast distances involved, aviation constitutes an important and vital part of the infrastructure in the Nordic States. By way of example, the distance between Oslo, the capital of Norway, and the northernmost part of that country, is approximately the same as the distance between Oslo and Rome, Italy.

More than 100 airports with regular domestic and international flights—as well as several heliports and helistops in the more remote areas—are serving the population throughout the region.

In 2008, almost 115 million passengers were departing from and/or arriving at Nordic airports on international and domestic flights.

With respect to its planning, the development and operation of the airport network, its airlines, air navigation services and technical infrastructure, safety has the highest priority in Nordic aviation. The focus of all the Nordic States will remain on developing aviation as a safe and efficient means of transportation. ■

Nordic Aviation By-the-Numbers

	DENMARK	FINLAND	ICELAND	NORWAY	SWEDEN	TOTAL
Arriving and departing passengers 2008	25,914,000	17,544,522	1,991,338	41,188,787	28,076,000	**114,714,647**
Movements in major airports (Dep. + Arr.) 2008	454,800	273,550	164,188	561,037	323,092	**1,776,667**
IFR operations grand total for 2008	635,597	266,483	110,366	870,365	726,195	**2,609,006**
Aircraft on national register grand total for 2008	1,123	1,472	406	1,159	1,735	**5,895**
Total number of certified personnel[1]	11,228	9,396	2,201	12,858	11,132	**46,815**
Number of airports (excl. private airfields)	29	28	59	56	60	**223**
Number of AOC-holders	27	38	18	28	76	**183**

[1]Numbers reflect that one person may hold more than one certificate.

Nordic Safety Culture and Non-punitive Occurrence Reporting

The constant improvement of aviation safety is based mainly on systematic data collection and the subsequent analysis of accidents and incidents.

There is a need to learn from accidents and incidents through safety investigations in order to take appropriate actions to prevent the repetition of such events. Also, minor occurrences need to be investigated in order to prevent faults that could lead to accidents. Statistics and analysis of aviation occurrences indicate that the primary cause of aircraft accidents and serious incidents are connected to human factors. This fact should motivate and encourage everyone to turn human

weakness into strength by learning from each mistake and by reporting all incidents without the risk of recrimination. In that manner, both flight safety and the enjoyment of flight will be increased for all those who fly.

This requirement calls for reporting systems that disclose human errors and other faults that transpire on a regular basis. It is imperative, however, to create an environment in which people are encouraged, even rewarded, for providing essential safety-related information—but in which there is clarity on where the line must be drawn between acceptable and unacceptable behaviour.

The Nordic States have worked together for decades to produce such an environment within Nordic civil aviation—an environment often referred to as a 'Just Culture.' It is a culture in which frontline operators or others are not punished for their actions, omissions or decisions that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.

A 'no-blame' culture, with blanket amnesty on all unsafe acts, would generate legal problems and would likely lack credibility. What is desired, therefore, is an atmosphere of trust, where errors are reported, analyzed and then used to further optimize safety.

By seeking to obtain an environment based on protection of sources and a non-punitive reporting system, the Nordic safety regulators believe that both the level of safety awareness as well as the sharing of safety related information, are improved.

One of the cornerstones in collecting and analyzing safety-related information is a confidential and non-punitive reporting system; one which facilitates the collection and exchange of information on actual or potential safety hazards and deficiencies while contributing to the prevention of aircraft accidents as required in ICAO Annex 13, Chapter 8.

In 2001, the Danish Parliament approved national legislation introducing mandatory, confidential and non-punitive occurrence reporting and, based on the positive experiences with this system, the Nordic States actively sought to have a similar system introduced in the European Union.

This was accomplished two years later through European legislation on occurrence reporting in civil aviation—Directive 2003/42/EC. The Directive establishes requirements for mandatory reporting of occurrences which, if not corrected, would endanger the safety of aircraft, its occupants or any other person. The Directive has been incorporated in national legislation throughout the European Union since 2005.

Directive 2003/42/EC defines a detailed list of safety occurrences to be reported to the competent authorities by personel with functions within the following areas:

- Operation of aircraft.
- Ground handling of aircraft.
- Maintenance of aircraft.
- Maintenance, repair and overhaul of air navigation facilities.
- Air Traffic Control and Flight Information.
- Airport operations.

To pool the safety occurrence information in Europe and overcome the problems rooted in incompatible data collection and data storage formats, the European Union introduced harmonized safety occurrence reporting requirements and developed the ECCAIRS (European Co-ordination Centre for Accident and Incident Reporting Systems) database. Iceland was the first State in Europe to fully share its data in the ECCAIRS central database.

The database offers standard and flexible accident and incident data collection, representation, exchange and analysis tools. The database is compatible with ICAO's ADREP system and supports the presentation of information in a variety of formats. Several non-European States have decided to implement ECCAIRS to take advantage of the common classifications.

It is generally acknowledged within the aviation community that, without intervention, an increased number of flight operations will result in an increased number of accidents. Hence the aim of a Nordic safety culture and the introduction of confident and non-punitive reporting systems will contribute to further 'fine-tune' flight safety. ■

Equal Opportunity for Unequalled Careers

Women Take on More and More Key Roles in Nordic Aviation

Women in aviation have a long history in the Nordic countries and the number of women in the industry is growing. By the 1950s, several Nordic women had received their pilot's licences and, since 1980, the number of female licensed air traffic controllers has risen dramatically.

Although a career in the aviation industry is not commonly considered a job for women, there is no field of aviation in the Nordic region today which does not have female representation in its workforce. Today, women in Norway are working as air force pilots flying F-27s as well as helicopter pilots flying for the Norwegian coast guard and rescue team.

In Sweden, women account for approximately 4.5 percent of total pilot licences with a high of 9.1 percent in the CPL (A) category. In Iceland, six percent of pilots (CPL, ATPL) are women, while only 0.6 percent of licensed aircraft maintenance staff are female. 26.6 percent of all Icelandic air traffic controllers are women.

It's also noteworthy that, on the Icelandic Women's Rights Day, June 19, 1999, for the first time in that country's history, all crew members on an Icelandair international flight from Reykjavik to Copenhagen were women.

Although there has been a strong tradition in the Nordic countries to provide equal opportunities for all regarding education and occupation, there still seems to be some professions that women are reluctant to seek— aviation being one of them. When it comes to licensed cabin crew one will inevitably find that a majority are women, whereas it is somewhat more difficult to spot a female airline pilot, mechanics or flight engineer.

In Denmark, fewer than 200 women are licensed out of a total number of approximately 4,700 pilot's licences that have been issued. These women pilots are represented in the categories of Private Pilot's License, Commercial Pilot's License and Air Transport Pilot's Licence, and are flying fixed-wing as well as rotor-wing aircraft.

In the Royal Danish Air Force it was made possible for women to become military pilots as early as 1992, and though a few women have been occupied in the air force since then, flying helicopters and transport aircraft, it was not until 2006 that the first female Danish fighter pilot went solo in an F-16 fighter.

On the other hand, approximately 30 percent of Danish air traffic controllers are female and occasionally the number of female ATCO's has reached an even higher amount.

Sweden got its first female air traffic controller in 1969. As of today, approximately 50 percent of the air traffic controllers in Sweden are women.

Even when it comes to the operation of airports you can find women in central positions in the Nordic countries. Finland has one female airport director and, in Sweden, at the state-owned LFV Group, seven out of fifteen airport managers are women. That is probably the highest percentage in the entire world.

So when a few decades ago young girls would dream about becoming a 'stewardess' or maybe a private pilot, today you will find more and more young girls saying they want to become commercial pilots or even air force pilots when they grow up.

The opportunities are there—all that remains is for these new women candidates to reach out and give aviation a try. ■

NUAC: A First Step Towards a Common Airspace

Sweden and Denmark are taking an initial step towards the improved harmonization of European airspace. This bold and pioneering measure will be achieved through the introduction of a new body which will jointly oversee the air navigation areas now serviced separately by the two Nordic States.

The new joint airspace will be administered by an organization known as Nordic Upper Area Control (NUAC), which will be co-owned by LFV/ANS in Sweden and Naviair in Denmark. Management is expected to be selected and onboard by early 2010, and the company should be fully-certified and up and running by 2012.

“With this joint venture Sweden and Denmark will be at the forefront when it comes to efforts to harmonize and make more efficient use of European airspace,” commented Sweden’s Minister of Infrastructure, Åsa Torstensson. The fact that national borders will no longer decide which route an aircraft can choose also means that the Swedish/Danish collaboration should serve as an important benchmark in the continued development of ATM/ANS in the Nordic region of Europe specifically and the broader European airspace as well.

Pioneers in a Cooperative Approach to Airspace Management

The merging of Danish and Swedish airspace will provide for more efficient air traffic control and additional savings that will allow carriers to enjoy fuel savings and passengers to expect shorter flying times.

The decreased fuel consumption and its associated reduction in carbon dioxide emissions promised through the merged airspace and employing its newer, shorter routes is currently estimated at 52,000 tonnes per year. This corresponds to an estimated cost saving of about 45 million Euros per year, not to mention additional increases in the overall airspace capacity.

Although the Swedish and Danish Ministers of Transport presented their plan for a common airspace earlier in 2009, preparations had in fact been going on for several years in the two countries. A key objective of the new body will be to see more countries joining in the near- and mid-term future.

NUAC will maintain the three control centres in Stockholm and Malmö in Sweden, and Copenhagen in Denmark. Its underlying agreement also specifies that all staff will keep their positions in their national companies and be, in effect, ‘on loan’ to NUAC, which will have about 50 staff when it’s fully operational. ■

Providing Historic Leadership and Assistance Through a Joint Nordic Delegation to ICAO

Since 1944, the Scandinavian States—and later all Nordic States—have maintained a joint Delegation to the International Civil Aviation Organization (ICAO). This joint Nordic Delegation, known as *NORDICAO*, is comprised of representatives from Denmark, Finland, Iceland, Norway and Sweden.

The existence of this cooperative body, as well as the regular presence of a NORDICAO participating delegate on both the ICAO Council and Air Navigation Commission, has helped to foster highly harmonized civil aviation regulations and legislation within the five Nordic States as well as a set of unique contributions to ICAO throughout its history.

The NORDICAO Delegation's primary aim is to foster the Nordic States' aviation interests within the framework of ICAO and to strengthen ICAO's role as the global organization for developing and harmonizing civil aviation SARPs and guidance material.

The present NORDICAO Delegation is staffed by four persons:

- Head of Delegation and Representative on the Council, Mr. H. Sigurdsson.
- Alternate Representative on the Council, Mr. F. Christensen.
- Air Navigation Commissioner, Mr. B. Eckerbert.
- Administrative Officer, Mrs. A. Westin/Mrs. B. Riedler.

Iceland was elected ICAO Council Member for the triennium 2007 to 2010. The Icelandic Representative on the ICAO Council for this triennium, and present head of the Nordic Delegation, Mr. Hallgrimur (Halli) Sigurdsson, has an operational and managerial background in Air Traffic Management. Mr. Sigurdsson has furthermore been actively involved in NATO operations at Kosovo's Pristina Airport as well as Kabul Airport in Afghanistan.

The Delegation members are in close contact with their national safety regulators and report directly to the Directors General of Civil Aviation (DGCAs) for each of the five Nordic States. The DGCAs meet regularly to coordinate the tasks for the Delegation.

The cooperation between the Nordic States goes all the way back to the Chicago Conference in 1944 where Norway, as a newly-elected Member of the Interim Council, was considered a Representative for the Nordic geographical area.

The Interim Council, first elected on December 6, 1944, consisted of 20 Delegates. Regretably India, with its

Halli Sigurdsson, current Head of the NORDICAO Delegation and its Representative on the ICAO Council.

An SAS *DC-4 reg. LN-IAD* overflies the Statue of Liberty, New York. Copenhagen-New York, the first SAS route, was inaugurated September 17, 1946.

geographical position and large population, was not elected. On December 7, the very last day of the Conference, the Norwegian Ambassador, Mr. Wilhelm Munthe de Morgenstierne, announced that Norway, elected as one of the 20 Members of the Interim Council, would offer its seat to India. The Cuban Delegate, Mr. Felipe Pazos, asked Norway to withdraw its offer, and in turn offered Cuba's seat to India, since the Caribbean Region was well represented in the Interim Council.

In this way India became a Member of the Interim Council and the President of the Conference and Chairman of the American Delegation, Mr. Adolf Berle, remarked that these two examples of nobility promised a successful future for the newborn organization.

Three years later, in May 1947, the first Assembly of the International Civil Aviation Organization took place in Windsor Hall, Montreal. Neither Norway nor Denmark ran for a seat in the Council, in order to facilitate the election of Sweden. The Swedish delegate expressed his gratitude for his country's election to the Council, commenting at the time that the actions of Norway and Denmark demonstrated: "Further evidence of that spirit of cooperation which the Scandinavian countries have already shown on international air routes, where they are, in fact, operating a joint airline service."[1]

The Scandinavian Delegation originally comprised Denmark, Norway and Sweden. Finland joined on March 1, 1976, and, to reflect this inclusion of a Nordic country, the term *Scandinavian Delegation* was changed to *Nordic Delegation*. On July 1, 1980, Iceland also joined the Nordic Delegation which now encompassed all five Nordic States.

Today, the Nordic Delegation to ICAO represents a combined population of approximately 25 million, spread over a land area of 3.5 million km^2. The airspace controlled by the five Nordic States totals approximately 8.4 million km^2—comprising a vast area in Northern Europe and over the North Atlantic equivalent to 82 percent of the European landmass or the entire landmass of Brazil.

One achievement that has arisen from the close cooperation between the five Nordic States through the years is the remarkably harmonized national legislation within the five States regarding civil aviation regulation.

This has been made possible in part because a Nordic Representative has been steadily maintained on the ICAO Council and in the Air Navigation Commission. The Nordic States have succeeded in participating actively in ICAO's programmes, harmonizing—to the fullest extent possible—the Nordic position in all ICAO matters and ratifying international Conventions made under the auspices of ICAO.

The Nordic States consider ICAO the global focal point for the continuous improvement of aviation safety.

Consequently, aviation experts on different subjects have been seconded to the Organization when needed—and at no cost to ICAO. On several occasions, extra employees have been permanently placed in Montreal to assist ICAO Study Groups.

Another example of the close cooperation between the Nordic States is the Nordic Educational Board, tasked primarily to harmonize the education and training of safety inspectors through courses and exchanges of experience as well as to improve the inter-Nordic relationship and the harmonization of Flight Safety Inspections.

The Nordic Courses establish common grounds for basic and recurrent training for inspectors in 'safety inspector-related' positions. Participants are briefed on recent developments in international cooperation, Human Factors and Quality and Safety Management Systems in aviation.

The subjects covered in the course are generally of a legislative and regulatory nature and include topics such as Safety Management Systems and State Safety Programmes.

One of the key elements in the joint Nordic aviation safety work, in the near future, will be to establish State Safety Programmes to ensure the efficient implementation of oversight activities by service providers. These activities will be based on the assessment of safety performance as it relates to the service providers' Safety Management Systems and related objectives.

Such programmes will only be efficient when based on explicit policies, procedures, management controls, documentation and corrective action processes to keep State safety management efforts on track. The Nordic States plan to have completed this task by November 2010, in order to be effectively prepared for the challenges ahead and to further advance their ongoing efforts to promote safe and efficient aviation. ■

[1]The reference was made to the Scandinavian Airlines System (SAS), founded on August 1, 1946.

The Kingdom of Denmark

Including Greenland and the Faroe Islands

Progressing Safely and Efficiently: CAA Denmark

The Danish Civil Aviation Administration (CAA Denmark) is a specialized body whose focus areas are aviation safety, security and airspace regulation as well as economic and performance regulation.

CAA Denmark acts as the aviation regulator in Denmark, the Faroe Islands and Greenland on behalf of the Danish Ministry of Transport. It's engaged in national as well as international commitments. Flight safety inspections, as well as security inspections, are therefore conducted both on the Danish mainland as well as in the Arctic region, where aviation plays a significant role in day-to-day transportation requirements.

The basis for flight safety in these areas is achieved through CAA Denmark's civil aviation standards and the supervising of compliance to those standards by commercial and private operators. Thus, CAA Denmark contributes towards creating a framework that enables air traffic to operate as safely and efficiently as possible.

Safety targets are established in order to avoid loss of life or serious personal injury as a result of aviation in Denmark or Danish aviation abroad. Flight safety must therefore be constantly improved and crimes or threats against civil aviation must be prevented. The regulations governing flight safety must be based on international standards and they must simply and clearly improve the overall level of safety.

CAA Denmark participates actively in and associates a high degree of priority to all international fora where regulations and standards are debated. Danish regulations are based on those of the European Union, the European Aviation Safety Agency, EUROCONTROL and ICAO as per the following principles:

- Danish regulations are based on international standards and must be in complete concurrence with them. Danish regulations may only deviate from the international standards in cases where special motivating factors exist.
- Danish regulations must enter into force concurrent to related applications of international standards.
- Danish regulations must be simple to comprehend and be available in printed and electronic formats.

A systematic analysis of Danish safety regulations and their relevance is performed regularly. The ICAO audit team visited Denmark in the fall of 2008 as part of its Universal Safety Oversight Audit Programme. The Audit Report revealed only minor deficiencies—all of which have since been corrected. ■

Perspectives and Challenges for Civil Aviation

An interview with Director General CAA Denmark, Mr. Kurt Lykstoft Larsen

The Director General for Civil Aviation in Denmark, Mr. Kurt Lykstoft Larsen, is also Vice-President of ECAC and ECAC's Focal Point for Security and Facilitation. He is also the Chairman of EUROCONTROL's Standing Committee on Finance and has been a Member of the European Aviation Safety Agency's (EASA) Management Board for a number of years.

Provide if you would a brief introduction to the Danish Civil Aviation Administration.

Kurt Lykstoft Larsen: The Danish Civil Aviation Administration (CAA Denmark) is the aviation regulator in Denmark, Faroe Islands and Greenland, acting on behalf of the Ministry of Transport. All civil aviation regulatory functions are integrated within this single, specialized body. In short, CAA Denmark contributes towards creating a framework that enables air traffic to operate as safely and efficiently as possible—for the benefit of air passengers and society alike.

How can ICAO contribute further to flight safety?

One must remember that, in spite of cultural and other differences, the aviation community all over the world shares the same objective to constantly improve flight safety. ICAO is the global focal point for these efforts and has taken many important initiatives to help its Member States in achieving higher standards.

State Safety Programmes (SSPs) and Safety Management Systems (SMS) are just two recent examples. Since internal training is one of the key elements in the SMS approach, we took the initiative in CAA Denmark two years ago to invite representatives from ICAO to Denmark to hold a course on SMS for 30 of our flight safety inspectors.

ICAO's Universal Safety Oversight Audit Programme (USOAP) is another example. Denmark has always supported USOAP, as we are of the opinion that it benefits global aviation to assist countries in complying with safety standards. As a matter of fact, Denmark was subject to an ICAO USOAP Audit in the fall of 2008.

Are you satisfied with the Audit result?

Well, you are never quite satisfied, but it was encouraging to be able to conclude that all vital aspects our legislation, as well as our procedures, are in compliance with ICAO's Standards and Recommended Practices. The audit team, however, did have some findings with respect to minor deficiencies and that shows that there is always room for improvement.

It has been brought up that Europe should take a more leading role regarding flight safety standards. Do you agree?

For more than 60 years ICAO has been the one global organization to set flight safety standards for civil aviation. The results speak for themselves since we have seen a steady growth in the number of flight operations and passengers combined with a steady decrease in the accident rates over the years.

In my opinion we cannot, in a global system, have different standards or definitions regarding flight safety. Therefore, ICAO has also in the future an essential role to play.

Environmental issues have been put high on the agenda in recent years. Do you see possibilities for civil aviation as it seeks to cope with those challenges?

It is correct that climate change and emissions are topics that are high on the agenda—not least in Europe. Civil aviation contributes two-to-three percent of total annual GhG emissions, and it is vital that the aviation community acknowledges its responsibility to decrease its share.

It is crucial to make use of all possible means at our disposal to decrease aviation's impact on the environment. However, aviation plays different roles in different parts of the world dependant on the geography and infrastructure of each country or region, so in dealing with these problems you have to bear in mind that one size does not necessarily fit all. Therefore, you have to carefully analyze the costs and effects before initiatives are taken or imposed.

In July, 2008, you were re-elected as Vice-President for the European Civil Aviation Conference (ECAC) and as Focal Point for Facilitation and Security. What are the benefits of international cooperation on facilitation and security?

It is of great value to exchange views on both topics with representatives from other Regions of the world. Sharing of experiences and best practices are undertaken under ECAC's Memoranda of Understanding with its sister bodies and with bilateral partners throughout the world.

Every second year, together with Singapore, we organize an aviation security forum for the Asia-Pacific Region, and in June 2009 I had the pleasure to chair the Joint Security Forum in Morocco, which was organized together with the Arab Civil Aviation Commission. We had a successful two-day workshop, discussing topics such as international cooperation seen from a regulator's perspective as well as security and facilitation as viewed from an airline's perspective.

Are security measures going too far at the cost of facilitation?

I am sure we all share the opinion that aviation security is of paramount importance and that security measures need to be efficient, well balanced and should be implemented in a workable manner. Also the cost incurred by the measures should be proportionate to the added value of the measures.

But we also need to focus on a reasonable balance between security and facilitation, as facilitation is significantly affected by security measures. Maintaining this balance represents a real challenge since every time a security incident occurs and new measures are required, it comes at a price for facilitation. Operations at airports become more difficult, time consuming and expensive.

How could such a balance be obtained?

One of the major problems seems to be that we are adding extra layers to our security systems whenever we are faced with a different kind of threat—or rather when the already known threats take another shape or form. Of course, we all recognize the need for swift action whenever a security incident happens, but it would be wise to assess the impact and know the operational consequences before we decide to implement any long-term security measures.

> **"The cost incurred by security measures should be proportionate to the added value of the measures."**

I am also convinced that new technology can play a very important role in the development of aviation security. In short, I am hoping for a development where impact assessments, technical knowledge, new technology and—in particular—common sense are the major ingredients of any proposed aviation security solution.

How do you see the future role of ICAO?

Today civil aviation plays an increasingly important role both as a Regional, national and international means of transportation. This development accentuates the need for a global and effective organization within the field of civil aviation, ready to meet the coming years' challenges.

I am convinced, therefore, that ICAO has a key role in safety promotion throughout the world and that it is similarly crucial that the Organization maintains and extends its leading role in setting standards for flight safety, security and environmental impact reduction. ■

NORDICAO

THE NORDIC DELEGATION TO THE INTERNATIONAL CIVIL AVIATION ORGANIZATION

The Kingdom of Denmark, supported by all Nordic States, will be presenting its candidature for election to the Council of the International Civil Aviation Organization (ICAO) at the 37th Session of its Assembly.

Throughout its long history, NORDICAO has consistently demonstrated an exemplary level of collaboration and assistance in civil aviation.

The Nordic Delegation was the first ever rotation group with respect to ICAO Council elections and, since that important body's earliest days, a Nordic State has always held a seat on it.

The existence of this cooperative body, as well as the regular presence of a NORDICAO participating delegate on both the ICAO Council and the ICAO Air Navigation Commission, has helped to foster highly harmonized civil aviation regulations and legislation within the five Nordic States, as well as a set of unique contributions to ICAO over almost six decades.

DENMARK ▪ FINLAND ▪ ICELAND ▪ NORWAY ▪ SWEDEN

‘Green’ Departures, Flights and Approaches

Environmental issues have been at the forefront of aviation agendas in recent years, not least in Europe. Civil aviation currently contributes between two and three percent of total greenhouse emissions on an annual basis and there is a broad consensus within the air transport community to acknowledge its responsibility and to strive to decrease this percentage even further.

“It’s crucial to make use of all possible means at our disposal to decrease aviation’s impact on the environment,” remarked Danish Director General for Civil Aviation, Mr. Kurt Lykstoft Larsen. “Aviation plays different roles in different parts of the world depending on the geography and infrastructure of each country or region, so in dealing with these problems you have to bear in mind that one size does not necessarily fit all. As a sector we have to carefully analyze the costs and effects in each region before initiatives are taken—or imposed.”

Civil aviation is being proactive in its efforts to diminish its negative impact on the environment, primarily through research and development into more fuel efficient engines and airframes as well as efforts now looking into alternative forms of jet fuel. However it is also possible to further decrease fuel consumption by leveraging existing air transport instruments.

One of the key existing approaches available to save on fuel and other costs while minimizing negative impacts on the environment, is to implement a new set of behavioural patterns through training. One contemporary example is Eco Pilot Training which is currently offered by the Oxford Aviation

NAVIAIR

Air Navigation Services

www.naviair.dk

Academy (OAA). This programme, which is also available both for new and existing pilots, has been developed not only to train or update pilots as per standard methodologies, but to teach them to be more effective 'fuel managers' as well.

Training pilots to become proactive fuel managers will benefit the environment and can save airlines as much as four-to-six percent in fuel costs. The OAA has reviewed extensive simulations and real airline test cases to prove that the concept delivers. A detailed consultation with a client airline is made before the start of the programme to determine the best course of action and the appropriate training syllabus. One big challenge is changing entrenched behaviours and mind-sets, but through simulator training pilots are able to evaluate and experience the new efficiency benefits first-hand.

Another example of an existing tool that can be employed to improve efficiency is 'green' approaches, which have been tested for the past couple of years both at Stockholm Arlanda Airport and Copenhagen Airport.

A 'green' approach is basically synonymous with a Continuous Descent Approach (CDA). Since the early tests completed in this regard, more than 15,000 CDAs have now been performed at Arlanda Airport with fuel savings totalling more than 1,000 tonnes.

Continuous Climb Departures (CCD) are now also used for the vast majority of take-offs at Copenhagen Airport. A CCD procedure allows aircraft to climb directly to a designated flight level without going through a levelling-off stage. In more than 90 percent of the take-offs it oversees, Naviair, the Air Navigation Service Provider (ANSP) at Copenhagen Airport, allows for this deviation from Standard Instrument Departures (SID) to allow departing aircraft to climb directly to their cruising level.

SID procedures normally require aircraft to level-off at 6,000 feet before climbing further, requiring extra fuel as a consequence. At Copenhagen the SID Procedures are only mandatory during peak traffic hours, thus enabling Air Traffic Controllers to deviate from the conventional procedures for all non-peak take-offs. Because it is surrounded by water on three sides, Copenhagen is more able to fully employ this environmentally-friendly concept with suitably-equipped aircraft.

These 'green' concepts were first introduced in 1996, but the advantages have only now been proven based on an analysis made by EUROCONTROL's System for Traffic Assignment & Analysis at the Macroscopic Level (SAAM)—a European Airspace Design Evaluation tool used to model, analyze and visualize Route Network and Airspace developments with current or future traffic data at local, regional and European-wide levels. Typically, SAAM is used by airspace planners to improve TMA and/or en-route airspace system safety and capacity and to perform strategic traffic flow organization.

"We find the development of this unique concept for take-offs at Copenhagen Airport extremely positive," commented Andrew Watts of EUROCONTROL. "Our simulations substantiate significant fuel savings with reduced effect on the climate and we fully support the ANS providers' individual development of the best and most efficient solutions within their specific area."

EUROCONTROL's computer simulations show that the concept of continuous climb during take-off, on average, saves 200 kg of fuel per take-off—equivalent to a reduction of approximately 620 kg of CO_2. Another benefit is the reduced emissions of a range of other environmentally-damaging substances.

Air Navigation Services at Copenhagen Airport therefore saves its airline customers approximately 10,000 tonnes of fuel annually, while remaining cost efficient. On an annual basis it reduces CO_2 emissions by more than 30,000 tonnes. ■

The Republic of Finland

Thinking Globally, Acting Locally

Taking a look at current aviation issues from the Finnish perspective—an interview with Mr. Kim Salonen, Director General, CAA Finland.

Kim Salonen has been in charge of Finnish flight safety since 1993. The Finnish Civil Aviation Authority was established in 2006 as an independent agency under the Ministry of Transport and Communications. It handles flight safety, aviation security and air transport issues.

In 2010, CAA Finland will become part of the new Transport Safety Agency that will oversee Finland's aviation, rail, maritime and road transport safety. The new agency's aim will be to manage the Finnish transport system as a harmonized entity, promoting innovation and expertise and improving productivity.

In your opinion, what are the most important elements of aviation safety in Finland?

Kim Salonen: For Finland, as for all Nordic States, ICAO is the number one global player in the field of flight safety. ICAO is the focal point for all our work to improve Finnish aviation safety. At the same time, we are part of Europe, and our work is more and more governed by common EU legislation. Continuous growth in aviation and a steady liberalization process mean that supervision must be based on extensive international cooperation.

Open competition in air transport was the starting point for all common work in the European aviation sector. The European Aviation Safety Agency (EASA) was established to maintain a high uniform level of civil aviation safety in Europe, and many of its regulations are already effective in

Finland, such as those concerning airworthiness and maintenance. Next on the list are flight operations and licensing, followed by aerodromes and air navigation services.

EASA's authority is now extending over flight safety regulations in Finland. How does this affect the responsibilities of the national aviation authority?

New regulations will bring significant changes to our tasks and operating practices. The trend is clear: in all commercial aviation, the focus in flight safety oversight is gradually shifting from a detailed level, such as annual inspections of aircraft, to more general supervision of organizations and their staff. In other words, we are moving towards the inspection of larger entities—from nuts and bolts to Safety Management Systems (SMS).

Finnish aviation organizations today are increasingly responsible for the safety of their own activities, equipment and personnel. Our job is to make sure that companies—airline operators, maintenance companies, pilot schools—have drawn up and are applying their own SMS programmes. For us, a good and functional SMS is an assurance of quality. Moreover, it helps an organization to improve its operations on all levels.

As the focus of decision-making now shifts to EASA, the nature of national regulatory work is changing as well. Renewed expertise, work responsibilities and customer awareness are now, more than ever, required of our national authorities.

In addition to overseeing systems, Finland also conducts ramp inspections coordinated by EASA and aimed at ensuring that only safe airlines are allowed to operate within the EU. More than 3,000 ramp inspections are made at European airports each year, both on domestic and foreign aircraft. These have proven to be an efficient way to monitor flight safety and keep national authorities in Europe well-informed about recurring problems. Through these inspections, the countries of Europe contribute to the safety of aviation all over the world.

Let's talk more about the liberalization of air transport policy. What are its advantages?

Well, first of all, air transport always generates prosperity in the local economy: e.g. in the forms of jobs and tourism. Tourism and air transport combined are the largest of all industries worldwide. In many countries, such as those that are islands, landlocked or otherwise peripherally located, travel by air is often the fastest or simply the only feasible mode of transport.

By permitting the aviation market to respond to the needs of business and tourism, I believe the most optimal air transport system will take form. Of course, there are always remote areas with low population density that will not attract airlines for normal operations. In the European Union, governments can buy capacity on such routes as public service.

By removing the barriers from free competition, we help to bring down the price of air transport for business and tourism. The yield per passenger for the airlines may decrease, but lower prices will be compensated for by more passengers and a less costly bureaucracy. This will accrue benefits to passengers and airlines alike.

Do you see any threats from open competition?

There are some, but they are out-weighed by the potential it represents. The world consists of richer and poorer countries and not all will have the chance to invest in aviation as heavily as others. On the other hand, the cost of work varies largely between countries, putting some at an advantage, and there is also the risk of unfair competition. Sometimes it is a choice between attracting investments and jobs or protecting a national airline. The current transition phase is most difficult. Certain governments still limit the routes that airlines can fly as well as the capacity which directly restricts competition.

There are various subsidies to airlines or aviation infrastructure in virtually every country, for instance in the form of charging schemes for air navigation and airport services, security services, fiscal taxation and public investments. Although they might not be direct subsidies in all circumstances, the national differences affect the environment in which the airlines operate. You could even say it is distorting competition in some cases.

We should, however, little by little, dismantle hindrances to air transport and start trusting the market. In doing this, we must look for a level playing field, acceptable to all. Safety will always remain fundamental but we must not forget that other issues are becoming more and more important as well. Security, the environment, capacity and facilitation will definitely be keeping us busy.

This leads us into the issue of environmental protection. Is it to some extent irresponsible to praise open competition which undoubtedly increases air transport and places a burden on the environment?

In promoting competition, we must not forget the underlying and urgent responsibility we all share for the environment. Exercising a liberal air transport policy does not have to contradict environmental values.

This winter, all industries will have to make some tough decisions to limit the impact of their activities on global warming. Doing nothing is not a choice. Some emissions trading schemes make it possible to move emissions allowances from other industries to air transport by investing in more cost efficient projects with an aim to reduce carbon dioxide emissions—for example, better power plant technology.

We also need to improve the efficiency of air transport through new technology, improved airspace management and switching to alternative fuels. It is better to see environmental protection as a window of opportunity and market advantage than to see it as a threat.

I believe the air transport community will come up with a global solution. Environmental protection schemes, preferably global, can and should be part of creating a level playing field. ■

Firm but Kind

Raija Niskanen, Finland's first female airport director, likes to talk things out

Located in Eastern Finland, about 400 km from the capital Helsinki, Kuopio is a city of 90,000 inhabitants. Kuopio—and its airport—are situated in the middle of the beautiful, natural surroundings of the Finnish Lake District. Some 300,000 passengers fly to and from Kuopio annually, making it the seventh busiest airport in Finavia's network. In May 2010, the airport will mark its 70th year of operation.

Raija Niskanen, or simply "Raija" to her staff, has been the Director of Kuopio Airport and Finavia's Regional Director of Eastern Finland since November 2008. She is one of the few female airport directors worldwide, and the first in Finland. In addition to heading Kuopio Airport, she is "the boss" for 180 people working at eight airports in Eastern Finland.

The Finnish landscape during the start of an approach to Kuopio airport. Sixty percent of Kuopio's passengers are business travellers, and the city's university and many thriving companies in the area rely on the facility's 10 essential daily connections to Helsinki.

Photo courtesy Miika Kostamo.

Raija Niskanen first came to work at the Kuopio airport as its financial manager. Prior to that, she had no experience in aviation.

"But," she noted, "I soon became very enthusiastic about my new surroundings."

After six years in the finance office, Niskanen was appointed airport director.

"They definitely chose the best applicant," she remarked with a smile, adding "I knew the place well, and had a solid background in economics."

Aerial view of the city of Kuopio. In 2010 the municipality will host Finland's national housing fair where visitors will be able to inspect a real residential area, with numerous buildings and saunas, installed along the city's beautiful lakeshore.

The new Lake Terminal was built to enhance tourism in the Lakeland area. In the summer, both boats and hydro planes dock at the facility and, in the winter, you can rent skis or a snowmobile.

Things Tend to Work Out

The Kuopio Airport director's responsibilities include management of human resources, finance and organization and facility coordination. Her motto—'Things tend to work out'—reflects her positive attitude towards new challenges.

"I was fascinated to learn how interesting and varied these tasks are. There are all kinds of questions you need to find an answer to!"

Niskanen considers herself as a very open person. Her staff can talk to her about any topic and her door is always open. She is convinced that open communication does not weaken her position as a leader but, on the contrary, feels that openness is essential in her work. Niskanen believes that employees feel free to talk to her openly about their concerns, in part, because of her gender.

"For a woman in a leading position, particularly in a field dominated by men, it is important to be confident, daring and able to make independent decisions," she commented. "One would expect aviation to be a masculine business because of its technical character but, today, there are many women in leading positions in aviation."

Niskanen has received only positive feedback on her appointment, but her gender sometimes is a surprise for customers, especially in foreign countries. At home her appointment was warmly greeted by her husband and two grown-up children. She says her family is her biggest supporter.

Multi-skilled Staff

Niskanen has always enjoyed working with men, and says she has had no problems with her male colleagues at other Finnish airports, or with her own employees.

"I have a feeling that I can always call other airport directors and ask for advice. They have really been very helpful thus far."

She compliments her staff and explains that her people are true professionals with many and varied skill sets. Many of them are capable of performing multiple tasks at the airport. By way of an example, Niskanen noted that one of her staff who takes care of the runways in the morning can be seen making passenger security checks in the afternoon.

"The team spirit here is excellent," she added.

CAA FINLAND: SERVING FINNISH AVIATION

The Finnish Civil Aviation Authority ensures the safety of civil aviation and handles issues related to air transport and the smooth flow of air traffic in Finland. The authority is responsible for issuing aviation regulations, and granting licences and overseeing their holders. CAA Finland grants certificates to Finnish air navigation service providers and supervises their operations. The authority also ensures that aerodrome movement areas, facilities and equipment meet all national and international aviation regulations. Ensuring passenger security and facilitating air travel are also central goals of CAA Finland.

Finavia is a state enterprise with a network of 25 airports in Finland. Finavia is responsible for the infrastructure and development of its airports and for providing high standard air navigation services. All Finavia airports are overseen by CAA Finland.

LET IT SNOW! KUOPIO AIRPORT IS READY FOR WINTER

"All our snow-clearing equipment—sweeper-blowers, snow blowers, chemical spreaders and friction testers—will be checked and maintained by the end of September," noted Kuopio Airport mechanic Robert Purdy.

During the winter months, it is essential that runways and apron areas are kept clear of ice and snow, for reasons of both safety and punctuality. Finland's northern weather conditions demand that the snow clearing teams employ a variety of skills and powerful equipment.

Most Finnish airports keep their runways free of snow and ice throughout the winter, ensuring that the surfaces have sufficient grip, or friction. Runways are most susceptible to skidding when temperatures rise above and dip below zero. The alternate thawing and freezing of the surface makes it extremely slippery.

"Dry winters are the best," Purdy remarked bluntly.

At Finavia airports, the runways are regularly inspected so that there is time to improve surface friction, if necessary. A special vehicle is used to take friction measurements whenever there is a change in weather conditions.

"We use primarily mechanical methods for keeping good friction on runways, which means sweeping and snow ploughing," Purdy concluded. "Chemical substances, such as acetates and formates, are used for removing slush and ice on the runway surface and for skid prevention. These substances have not been classified as environmentally hazardous."

Customers, Competition and Environmental Concerns

Kuopio Airport is concerned with topical global issues, including the pressing financial crisis and improved protection of the environment. Environmental issues are crucial not only for Kuopio, but for Finavia on the whole. In this regard there have been improvements in the use and disposal of runway chemicals, the status of the lakes surrounding the airport is constantly monitored, and new infrastructure has been built to reduce noise.

After recently receiving a new environmental permit, Niskanen remarked that "despite recent accomplishments, we need to be even more aware of the impact of air traffic on the environment."

Three airlines operate from Kuopio Airport. There are some ten daily connections to Helsinki and a flight to Riga, Latvia, four times a week. Sixty percent of Kuopio's passengers are business travellers, and Kuopio University and many thriving companies in the area rely on the facility's essential connections to Helsinki.

"Competition has also been good for air transport in recent years," added Niskanen. "It's had a downward affect on prices and gives passengers greater choice. There are, however, an increasing number of passengers who now choose to take the train to Helsinki, and not only because of the environment."

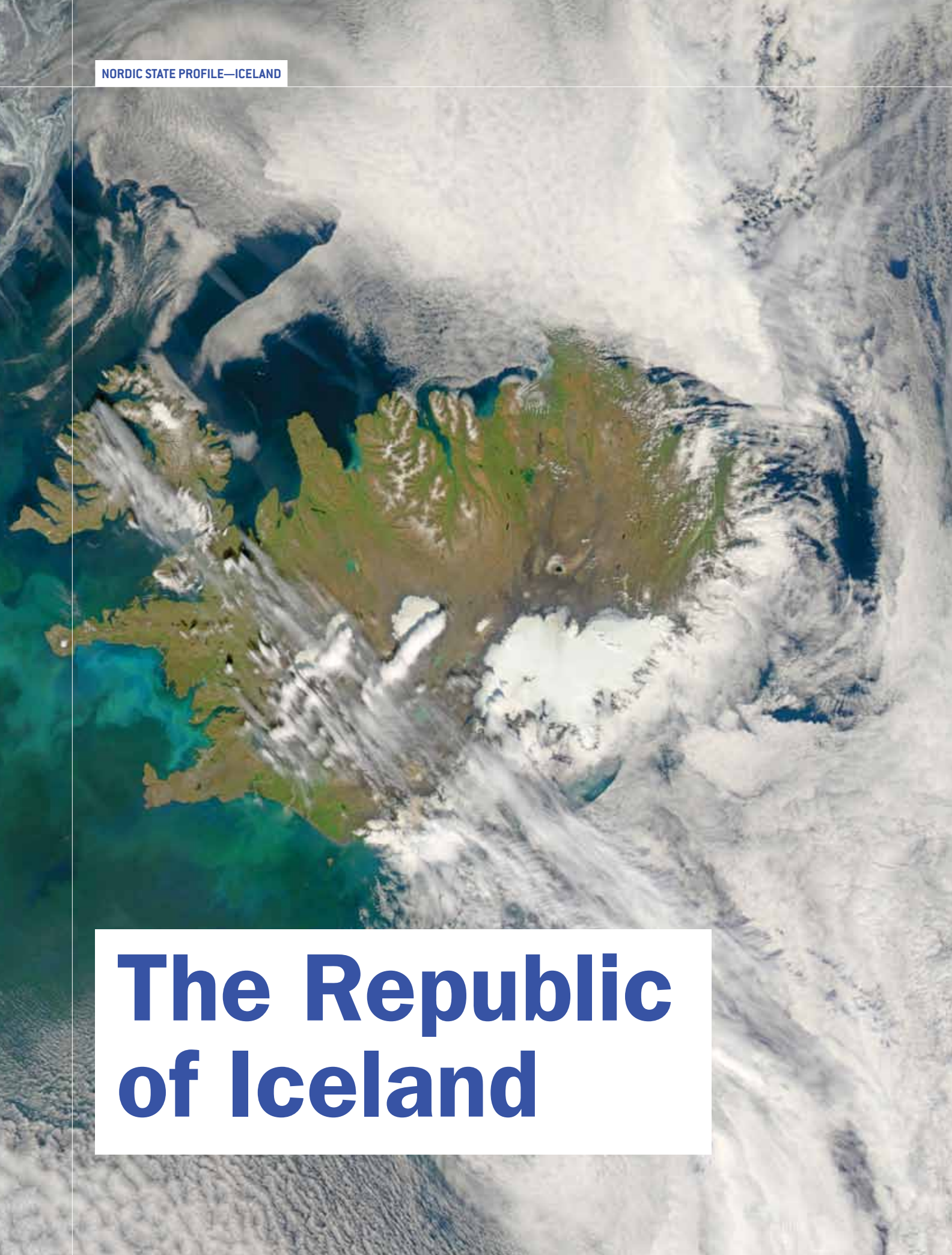
"We're constantly trying to improve our services and to better market the airport," commented Niskanen. "The eight regional airports of Eastern Finland work closely together—both to boost tourism in the area and to cope with temporary lay-offs."

Civil and Military Role

Kuopio airport has one particularly important customer—the Finnish Defense Forces. The facility is one of Finavia's 'joint operation' airports that host both civil and military aviation. Kuopio, in this regard, provides both air navigation and maintenance services for the Karelia Air Command. With its 20 Hornets, the air command keeps the airport busy on a daily basis.

For Niskanen, it is crucial to ensure a high level of service, including high safety standards, for all airport customers.

"As long as there is air traffic, there will be an airport in Kuopio," she concluded. ■



The Republic of Iceland

The ICAA

Meeting or Exceeding World-class Levels of Flight Safety and Operational Efficiency

Since its foundation in 1945, the Icelandic Civil Aviation Administration (ICAA) has played an important role in the development of aviation in Iceland. Petur K. Maack Ph.D., General Director, ICAA, took some time to highlight his administration's achievements and objectives for this special contribution to the Icelandic portion of the Nordic State Profile.

The ICAA has gained recognition abroad through decades of hard work in introducing, implementing and upholding international regulations—primarily those of ICAO—that govern international civil aviation activities. This has been achieved, in part, by the numerous operations audits conducted by international bodies (ICAO, JAA/EASA) as well as having successfully provided economical air navigation services to international air traffic in the North Atlantic area for decades. This reputation is vital for the Icelandic aviation industry which is much larger than the country's domestic air transport market.

The Icelandic aviation industry, with flight operations now reaching across the globe, obtains 80 percent of its income from abroad. The economic value of aviation production is on par with fishing and energy production—all large Icelandic industries.

Surveys show that the ICAA enjoys a high level of public trust, for which the organization and its staff are grateful. This has been achieved with the concerted efforts of the staff which from the outset has performed its tasks with great enthusiasm and skill.

The ICAA's safety and security auditors are highly qualified. They travel around the world to audit the activities of Icelandic operators and often seek the cooperation of local authorities to participate in leading audits.
The ICAA's auditors are also often recruited as members of international safety and security audit teams—recognition of the Administration's reputation and expertise, and providing opportunities for further developing staff skills and knowledge.

Most regulations in Iceland related to flight safety—and the culture of the Icelandic aviation industry—are international by origin. Iceland signed the Convention on International Civil Aviation on December 7, 1944, and became a founding Member State of the European Civil Aviation Conference (ECAC) in 1955. The ICAA participated actively in the development of the JARs under the umbrella of the Joint Aviation Authorities, after having signed the Cyprus Arrangement in 1990. In 2003, it became a member of the European Aviation Safety Agency (EASA).

In 1979, ICAA General Director Agnar Kofoed-Hansen (1954–1982), was awarded the Edward Warner Award for his outstanding performance and contribution to international civil aviation. The Edward Warner Award is presented by ICAO on behalf of its Member States to aviation pioneers or organizations that have made outstanding or otherwise significant contributions to civil aviation. The award is named after Dr. Edward Pearson Warner, the first President of the Council of ICAO, and no other international aviation award confers this level of recognition or acclaim.

Reykjavik Area Control Center

The Joint Financing Agreement, concluded under the framework of ICAO and regarding air traffic services in the North Atlantic region, has made it possible for Iceland to manage one of the largest air traffic control areas in the world.

The airspace managed by the Reykjavik Area Control Center is about 5.4 million km^2. It's range extends from the Greenwich meridian in the east to the west of Greenland, and from the North Pole to south of the Faroe Islands, close to Scotland.

Keflavik International Airport is the main international aerodrome in Iceland, processing more than 95 percent of the passengers visiting the country. It also serves as a hub for Icelandair's scheduled flights between Europe and North America. The highly rated and modern Leifur Eiriksson Terminal offers transit passengers a relaxed layover.

The Reykjavik Control Area (CTA comprises the Reykjavik Flight Information Region (FIR) and the Sondrestrom FIR.

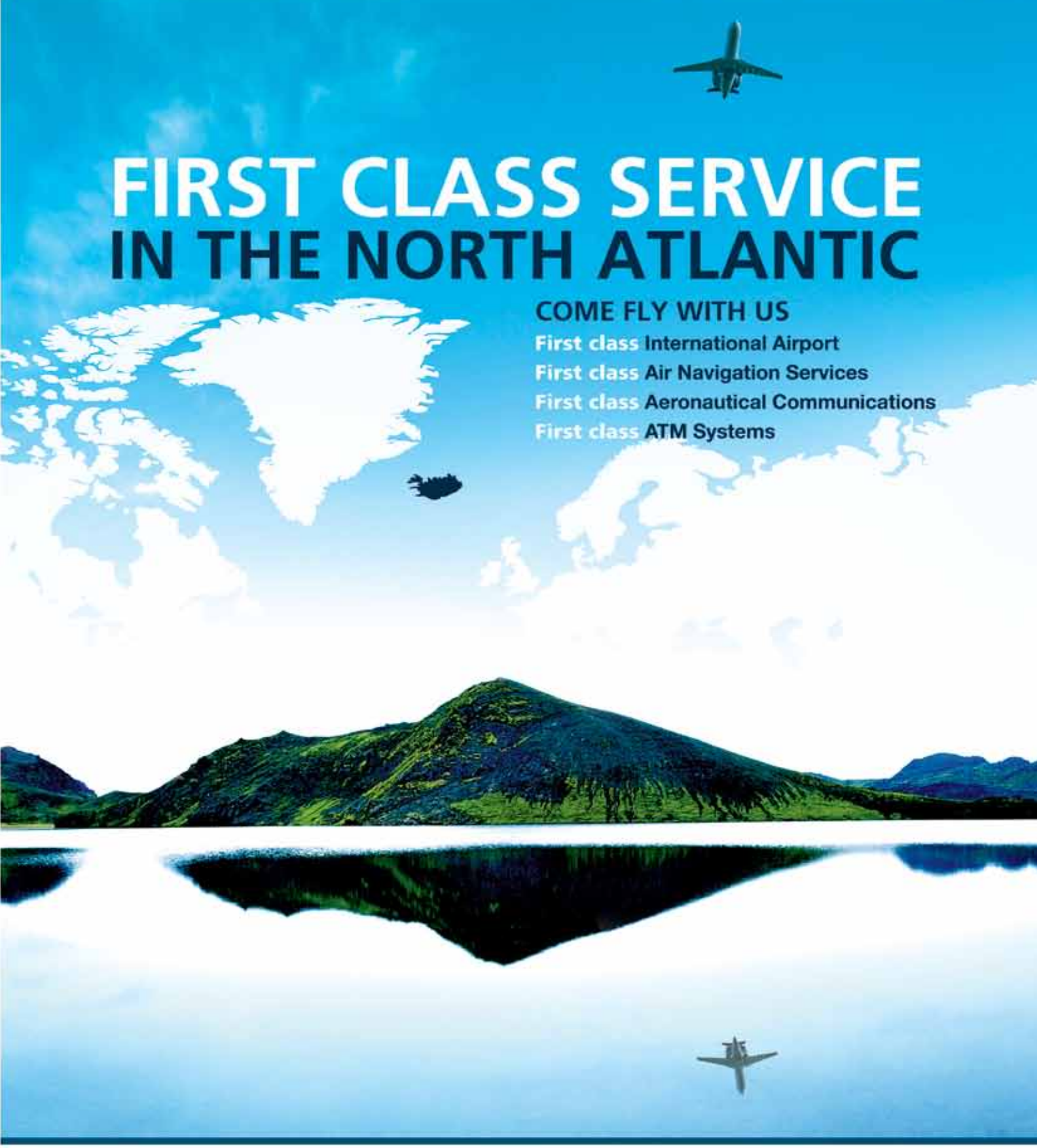
Isavia, a government-owned shareholding company, has provided the CTA services since 2007, after the separation of service provision and regulation commenced in 2006. A new regulation requiring an air navigation service provider to be certified by a national supervisory body also came into effect at that time—a role administered by the ICAA.

The vertical limits of the control area are from flight level 055 within the Reykjavik FIR and flight level 195 within the Sondrestrom FIR, with no upper limit. The oceanic area is divided into four smaller areas to facilitate control of air traffic. About one-quarter of the air traffic in the North Atlantic Area passes through this area controlled by Isavia. It has a unique position among oceanic areas because of flexibility with respect to the choice of flight routes and flight levels. This is made possible by the Reykjavik ACC's sophisticated technical systems and unique radar surveillance availability within the busiest part of the area.

In recent years, air traffic has increased at an annual rate of 7.5 percent which is significantly higher than the increase on the busiest routes across the North Atlantic.

Keflavik International Airport is the main international aerodrome in Iceland, processing more than 95 percent of the passengers visiting Iceland. It also serves as a hub for Icelandair's scheduled flights between Europe and North America. The highly rated and modern Leifur Eiriksson Terminal offers transit passengers a relaxed layover with bargain shopping opportunities. Keflavik's runways are 3,000 m long and 60 m wide, and the airport is an important alternate for aircraft crossing the North Atlantic. The runway layout and periodic meteorological conditions make Keflavik ideal for aircraft performance testing under safe conditions, such as icing trials and crosswind research. The crosswind testing of both the Boeing 777 and the new Airbus A-380 was conducted at Keflavik.

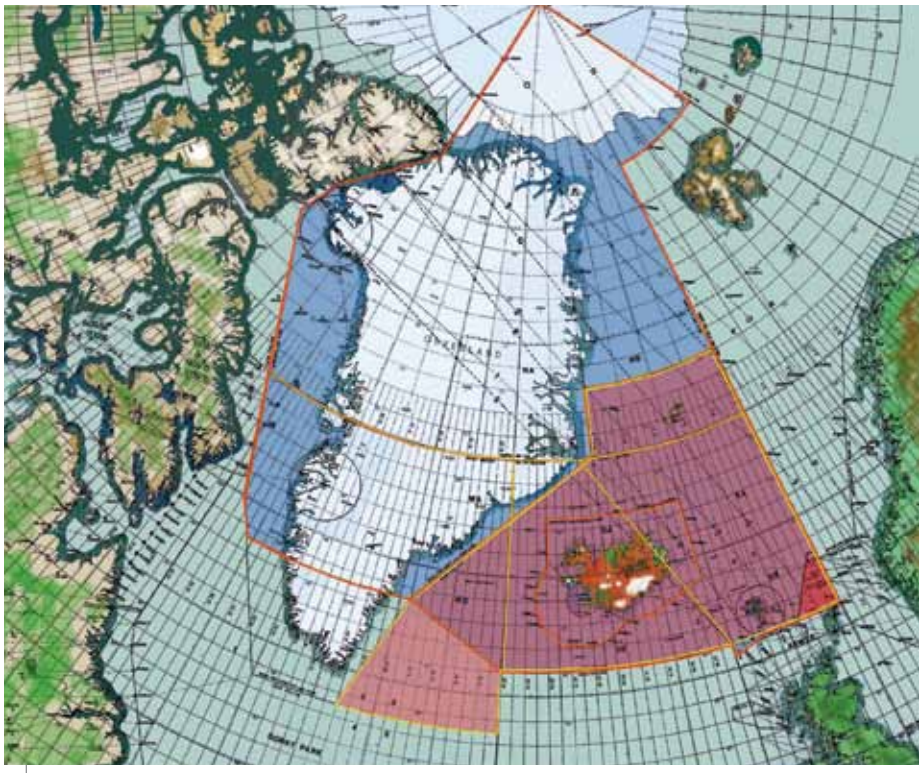
There are, at present, 18 air carriers holding an Icelandic AOC, operating more



In the Icelandic Air Traffic Control area, ISAVIA and Gannet ATS COM provide highly efficient Air Traffic Services to international aviation. Tern Systems has a proven track record of developing ATM systems and Keflavik International Airport serves all types of aircraft in a non-congested 24 hour operation.

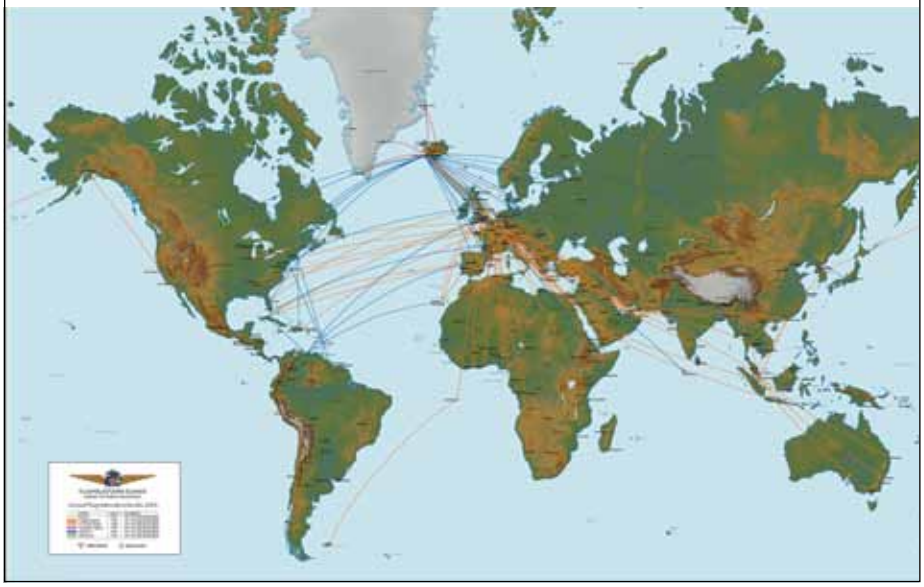
For more information kefairport@kefairport.is or isavia@isavia.is

Tern Systems GANNET ATS COM ISAVIA KEF KEFLAVIK



The airspace managed by the Reykjavik Area Control Center is about 5.4 million km^2. It comprises the Reykjavik Flight Information Region (FIR) and the Sondrestrom FIR.

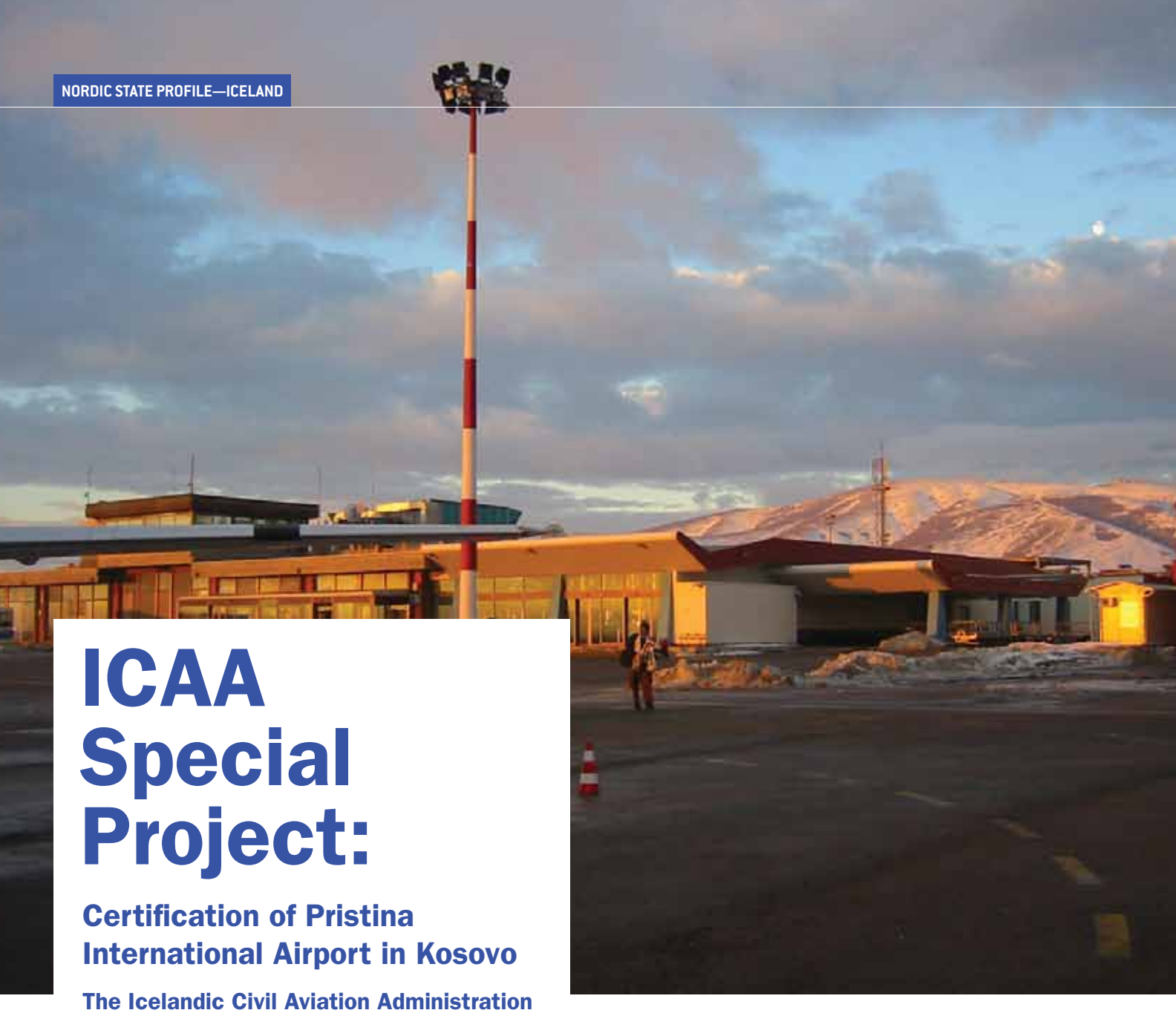
Figure 1: Icelandic AOC Holders Routes



than 60 aircraft with a MTOW of over 10 tons. An overview of the routes that they have recently served is provided in Fig 1 *(page 48, below)*. The carriers are managed with different business models.

Icelandair is a customer-oriented travel service company that currently serves 23 gateways in Europe, the United States and Canada. Air Atlanta Icelandic specializes in leasing aircraft on an ACMI (Aircraft, Crews, Maintenance, Insurance)/wet lease basis to airlines worldwide needing extra passenger and cargo capacity. It also operates charter services for Icelandic tour operators. In mid 2007, the airline decided to shift its focus to Air Cargo operations. Bluebird Cargo is a part of the Icelandair Group and operates freight missions within Europe and Scandinavia, and to North Africa, the Middle East, Canada and Greenland. Air Iceland is also a part of the Icelandair Group with firm roots going back to the early years of aviation in Iceland. Air Iceland is mainly a domestic airline, but it also serves the West Nordic countries. Icejet is a charter company operating private jets and the only Dornier 328 jet operator in the world permitted to fly into London City Airport. Norðurflug Helicopters is a charter operation based in Reykjavík that prides itself on its good service and experienced pilots. There are several other carriers—operating flights to Greenland and Vestmann Islands—that also play an important role in delivering supplies to rural parts of Iceland and have a role in Iceland's healthcare system by flying patients to Reykjavík's University Hospital, the biggest hospital in Iceland.

The ICAA strives to ensure that Icelandic aviation meets or exceeds world-class levels of flight safety and operational efficiency, regardless of whether these involve major airline operations, air navigation services to international air traffic, or the construction and operations of airports and other infrastructure for domestic and international air transport in Iceland. ■



ICAA Special Project:

Certification of Pristina International Airport in Kosovo

The Icelandic Civil Aviation Administration (ICAA) has been involved in several international aviation projects over the years. One major project was the management and regulation of the aerodrome in Pristina during its development and transformation from a military airport to a civilian airport, as per the ICAO SARPs published in Annex 14 to the Chicago Convention.

The Pristina project commenced formally on April 1, 2004, and the final aerodrome certificate was issued on October 30, 2008. The total cost for the five-year project was 20 million Euros.

The Pristina Airport project had two distinct but related objectives which were kept separate during the entire process, and which were run by two units—the Flight Safety Division and the Airports and Air Navigation Systems Division.

The task of the former included regulatory oversight and certification. The function of the latter was to provide assistance and operational services to the aerodrome operator. In 2006, the ICAA underwent major institutional changes when it ceded control of its service provision duties to Isavia, the new state-owned shareholding company. Isavia, therefore, added operations of airports and provision of air navigation services to its duties in Kosovo while the ICAA continued with regulatory duties.

The Pristina project was based on an agreement between UNMIK (United Nations Interim Administration Mission in

"The certification of Pristina Airport has been a major project involving the participation of several entities. In March 2004, the ICAA made an initial audit of the facility. Subsequently, a declaration of fitness for the airport was issued. An interim aerodrome certificate was later issued after corrections—based on the audit—were completed Under responsibility of the ICAA, the audit team's members were airport experts/auditors from Iceland, Finland and Denmark.

In 2006, Pristina International Airport was chosen by Airports Council International as the best European airport serving fewer than a million passengers."

Kosovo) and the Government of Iceland. The main tasks were to provide the following civil aviation functions on behalf of UNMIK:

Regulatory and oversight tasks:

- Licensing of air traffic controllers.
- Certification of Pristina International Airport, including equipment and services.
- Provision of aeronautical information services and meteorological services.

Operational responsibility and support including consultancy services:

- Responsibility for the provision of air traffic services.
- Support of operational services of the airport by provision of key personnel for the management of core airport services, including fire and rescue services, mechanical maintenance activities, navigational aids and the training of local staff.
- Training of air traffic controllers including initial training in Iceland.
- Consultancy and planning of extensive infrastructure improvements, including runway resurfacing and lighting systems, radar system acquisition and the development of emergency plans.
- Development and implementation of an aerodrome manual, including a Safety Management System (SMS).

Licensed local air traffic controllers were established within the first year, and nine novice controllers later received full training in Iceland. In total, 26 Pristina locals were trained and licensed as air traffic controllers. Provision of aeronautical information and meteorological services was established early and developed further throughout the duration of the project.

The certification of Pristina Airport has been a major project involving the participation of several entities. In March 2004, the ICAA made an initial audit of the facility. Subsequently, a declaration of fitness for the airport was issued. An interim aerodrome certificate was later issued after corrections—based on the audit—were completed. Under responsibility of the ICAA, the audit team's members were airport experts/auditors from Iceland, Finland and Denmark.

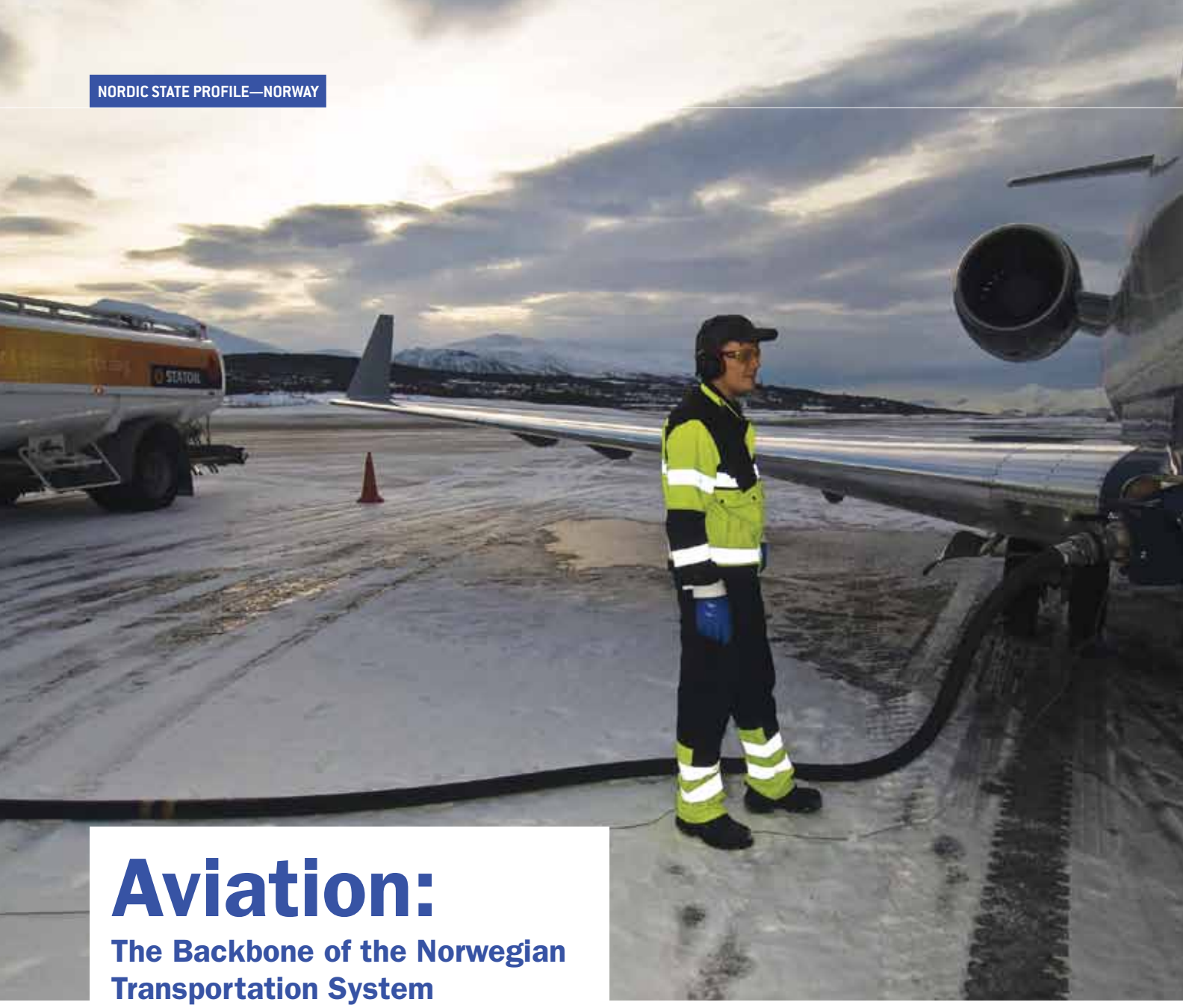
The findings of the initial audit resulted in the launch of several sub-projects, the first and most important being airport infrastructure. This was naturally the most expensive part of the total project. The role of the Icelandic organization in this project was mostly consultancy. Secondly, the sub-projects included the development of procedures for the management and operations of the airport: i.e. the development of the aerodrome manual, including the SMS component. Thirdly, a comprehensive training of aerodrome personnel was organized.

The whole programme lasted almost five years, during which inspections and audits occurred regularly. From the first declaration of fitness, Pristina was in operation as an international airport, with several European airlines using it as a part of their route network. This was possible because of several mitigating activities that were set in motion in order to compensate for those non-conformities that existed during the transition period, but which were gradually closed. The operation of the airport has been financially self-sustainable without any serious incidents occurring.

In 2006, Pristina International Airport was chosen by Airports Council International as the best European airport serving fewer than a million passengers (for more on this award, please visit *www.aci.aero)*.

The Icelandic Civil Aviation Administration and Isavia take pride in having been participants in this highly successful project. ■

The Kingdom of Norway



Aviation:

The Backbone of the Norwegian Transportation System

Commercial civil aviation provides, in many ways, the foundation of the Norwegian transportation system. It fills an essential role servicing a sprawling, rural population despite harsh climatic conditions, long distances between some populated areas and the State's challenging topography.

Norwegians use domestic flights more often than any other Europeans and Norway has more airports per citizen than any other European country. When it comes to air freight services, Norway similarly tops the list among its Nordic and European counterparts.

In 2008, there were almost 42 million air passengers in Norway, more than 22 million of which took domestic flights. Through the 1990s there was steady passenger growth. As in most other countries worldwide, this expansion was followed by a downturn towards the end of the century, with the decrease being most significant in total domestic passengers.

A second and considerable passenger growth period followed this downturn during the first years of the new millennium, but by the end of 2008 passenger totals had again decreased considerably and this trend continued through 2009 following the international financial crisis.

In the summer of 2008, the Ministry of Transport and Communications presented its new strategy for Norwegian civil aviation. Many government ministries and authorities, including

Audits by international organizations such as ICAO, EASA and Eurocontrol have revealed that Norway's CAA employees demonstrate high levels of knowledge with respect to State aviation practices and legislation. The audit-results also confirm that Norwegian aviation safety ranks high based on global comparisons—a great source of national pride and a testament to the commitment of the State's aviation professionals.

the Civil Aviation Authority, contributed to the strategy and the Ministry of Transport and Communications also sought to involve non-governmental bodies in the strategy process. Based on this review, strategies have been singled out with respect to the future policies that the Government has chosen to pursue.

The strategy document itself is a broad review of the state of, and the challenges facing, civil aviation in Norway today. It also provides an important contribution to the White Paper on the National Transport Plan for the period 2010–2019 which the Government unveiled earlier in 2009. The Ministry of Transport considers the independent strategy document best suited to address the wide-ranging challenges of Norwegian civil aviation. The document also allows issues specific to civil aviation, and beyond the natural scope of a National Transport Plan, to be considered and addressed.

The main goal of the Government's transport policy is to ensure that Norway has a transport system that facilitates flying within a particular State region or between regions. Norway's goals for its transport system include that it be characterized by a high degree of safety, significant regard for the environment and accessibility to all users. These overall goals for the transport sector and policy also underlie the strategy for civil aviation.

It must be noted, however, that the civil aviation strategy has been developed from a broader viewpoint than the transport policy alone. It addresses most areas in which the authorities have some impact on civil aviation, including policies relating to taxation, industry, consumer, competition, education and labour markets. Underlying the strategy is the knowledge that civil aviation plays a more important role in the transport pattern in Norway than it does in most European countries and that civil aviation makes an important contribution to maintaining settlements and social networks and improving employment throughout the country.

Aviation is not only an important factor for continued rural settlement in Norway, but also for facilitating trade and industry throughout the country. The commercial sector and local governmental administrations depend heavily on safe and efficient air transport. Air transport allows Norway's rural industries to offer their products and services to a larger market and a well-developed route network is a major factor for allowing the spread of

Aviation is not only an important factor for continued rural settlement in Norway, but also for facilitating trade and industry throughout the country. The commercial sector and local governmental administrations depend heavily on safe and efficient air transport.

IMPORTANT ASPECTS OF NORWAY'S CIVIL AVIATION STRATEGY

Civil Aviation—An International Industry

Many aspects of civil aviation are regulated at the international level. The Government and the Ministry of Transport and Communications will actively seek to promote Norwegian interests and ensure sound international solutions in the civil aviation sphere. The Civil Aviation Authority participates in international discussions together with the representatives from the Ministry of Transport whenever and wherever they take place.

Safety is the Highest Priority

Norwegian civil aviation is considered among the safest air transport systems the world and Norway intends to maintain this ranking. Efforts to enhance safety in this industry are on an increasingly international footing. A main challenge for the Norwegian authorities in the future will be to ensure that international standards are adapted to Norwegian conditions. In this respect, the Norwegian CAA plays a very important role as the State's competent authority. Through international audits, including those by EASA, Eurocontrol and ICAO, the Norwegian CAA and the aviation industry are all important contributors to safe and sustainable aviation in Norway.

More Sustainable Civil Aviation

Global climate challenges raise the question of whether the current rate of growth in air traffic, in particular the growth in the number of holidays taken abroad, can continue. Although civil aviation accounts for a small part of overall greenhouse gas emissions, the industry must shoulder its share of the responsibility. Norwegian civil aviation has drawn up measures that will curb the growth in greenhouse gas emissions by the industry. The climate threat is a global challenge, however, which cannot be overcome by the Norwegian civil aviation industry alone. The Government and the Ministry of Transport and Communications will work for global solutions to this problem, in which civil aviation will play its part.

Nationwide Infrastructure

Through its ownership of Avinor, the Ministry of Transport and Communications will ensure a good, useful network of airports across the entire country. Avinor is responsible for 46 State airports as well as air traffic management. Avinor faces challenges in the years ahead in terms of ensuring that the infrastructure has sufficient capacity. The ministry will play its part in enabling Avinor to continue to develop so that the company can continue to discharge its important social tasks in the future.

Guaranteeing Air Services and Passenger Rights

The Government will give airlines the framework conditions needed to ensure that the bulk of domestic air services offered can be maintained on commercial terms and conditions. It is also important to ensure the continued existence of an airline that offers a nationwide air services network in Norway and commensurate ticket schemes. In cases where the market offering is inadequate, the Ministry of Transport and Communications will continue its policy of purchasing air services.

Strengthening air passenger rights is another Government priority. This particularly applies to air passengers with reduced mobility. The Civil Aviation Authority has already taken this into consideration and has allocated resources to secure that this part of the strategy is followed up.

Education, Work Environment and Labour Market

The Government will ensure that good civil aviation training and education facilities are available in Norway. The Government will also see to it that the legislation ensures a high-quality work environment for civil aviation employees. Norwegian civil aviation has at times seen labour conflicts. Responsibility for wage bargaining and for industrial peace rests with the social partners' organizations. The partners need to ensure that such conflicts do not unreasonably affect the wider society and third parties.

A remote Norwegian airport. Challenging topography and the distance between many rural settlements and industries make aviation a key component of Norway's day-to-day social and economic activities.

knowledge and competence throughout the country. Many are of the opinion that civil aviation has contributed greatly to Norway's current prosperity.

Oil and gas industry employees are one example of frequent air travellers who are able to work at offshore installations in the North Sea and other places along the Norwegian coast, and live anywhere in Norway.

The oil and gas industry uses helicopters for transport of personnel to and from its offshore oil and gas installations.

Public health services also benefit from frequent use of Norwegian aviation. For the last decade, health service has become more specialized, requiring increased numbers of patients to travel by plane to seek treatment or undergo surgery. This is particularly true in northern Norway.

When patients cannot be transported through the ordinary route network, air ambulance, by plane or helicopter, is often used. Air ambulances are stationed throughout the country and give the public a fast and efficient way to get specialized health services in case of an emergency.

Aviation is also a major factor for full employment and settlement throughout Norway. A well-developed route network makes the distance drawback a minor problem and makes it possible for varied industry, in any part of the country, to survive where they are. Aviation secures the Norwegian population access to health, education and cultural activities as well as sports.

In Norway, passengers often have one or more stops in their journeys. An important part of a well-developed aviation transport system is airlines offering a countrywide route network where passengers can fly multi-leg journeys without leaving the aircraft. This is also an important part of the ministry's aviation strategy for the future.

Figure 1: Norwegian Airports and Their Locations

The Norwegian Civil Aviation Authority (CAA)

CAA Norway is located in Bodø, the second largest city in the State's northern region. Mr. Heine Richardsen was appointed Director General (DG) by the Norwegian Government on May 16, 2006. Mr. Richardsen has a broad and varied background in the Norwegian aviation industry—both professionally and based on his union experience.

The Norwegian CAA has 170 highly-devoted employees in seven departments: Flight Ops; Technical; Aerodromes and Air Navigation Services; Security; Legal; Trend/Analysis/Quality; and Administrative Affairs. Reporting directly to the DG are the Communications Department and Aeromedical Section. The DG's staff also consists of a group of special advisors who report directly to the Director General.

Norway DGCA
Mr. Heine Richardsen

Audits by international organizations such as ICAO, EASA and Eurocontrol have revealed that Norway's CAA employees demonstrate high levels of knowledge with respect to State aviation practices and legislation. The audit-results also confirm that Norwegian aviation safety ranks high based on global comparisons—a great source of national pride and a testament to the commitment of the State's aviation professionals. ■

The Kingdom of Sweden

The Swedish Domestic Market Post-deregulation

For almost 40 years, the airlines SAS and Linjeflyg had a virtual monopoly on domestic air transport in Sweden. Despite the fact that there were a number of regional operators serving the Swedish market, SAS and Linjeflyg were dominant and thus dictated the conditions for market entry. Deregulation of domestic aviation in the 1990s changed the domestic market and led to the emergence of new airlines and today's innovative air travel organizers.

Although there has been a reduction in Swedish domestic passenger numbers since 1990, the total number of airlines has not fallen significantly. In fact, not only has there been an increase in the number of airlines entering the Swedish market, but also in those leaving the market. Today it is increasingly seeing new types of market actors in the form of air travel organizers as well as airlines that do not carry their own traffic, but function merely as suppliers of capacity through wet-lease arrangements.

Swift Changes

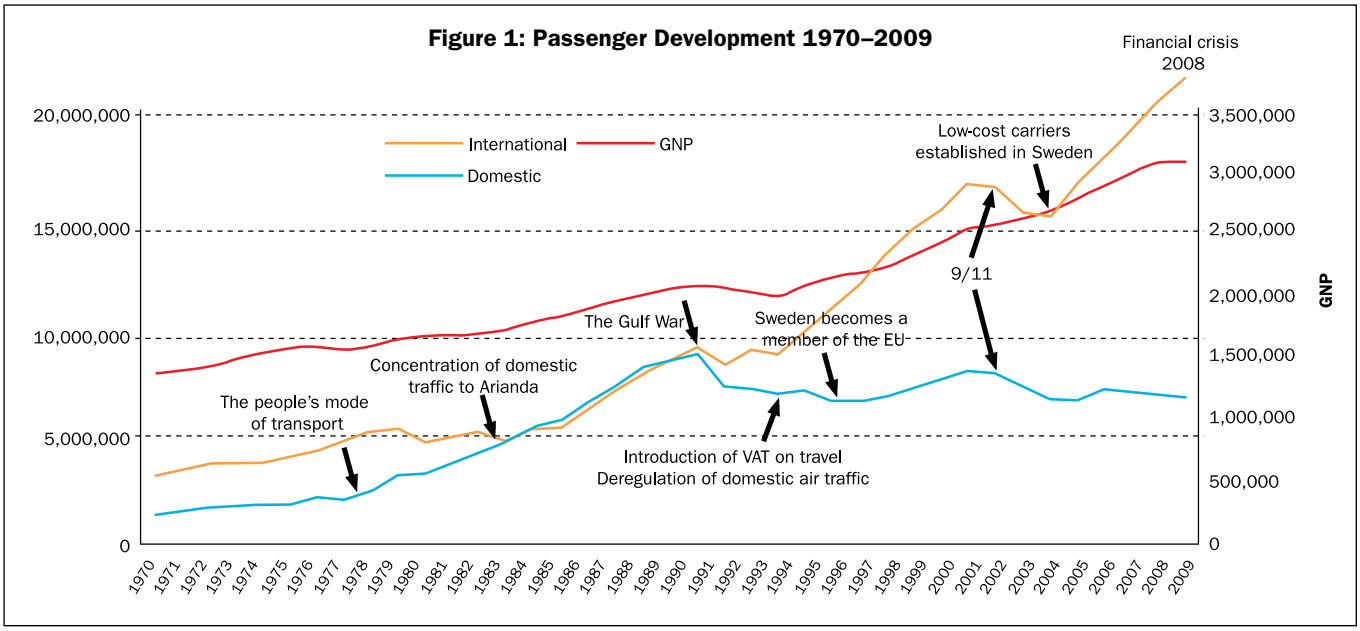
The Swedish aviation market has adapted to significant change in the last 10–15 years, continuing to evolve today to accommodate the newest innovators in air transport. There have been particularly rapid changes associated with two categories of Swedish air operators: Nordic regional carriers and air travel organizers. These operators have been successful in developing seasonal traffic to certain regions by ensuring the necessary local and regional support.

An air travel organizer is not an airline per se, but sells tickets under its own name and provides air transport through agreements with other airlines. The activities of an air travel organizer do not require an operating licence, nor is it under the supervision of the CAA.

Air travel organizers have shown a high level of flexibility, adapting themselves to the need of regions to develop tourism and trade. Could this concept help reinvigorate domestic aviation… Or will it further contribute to the fragmentation of domestic aviation? Market forces have yet to determine these outcomes.

Despite the removal of institutional market obstacles, deregulation has not yet elicited the desired changes in the domestic market. SAS has a significant market position partly due to its cooperation agreement with Skyways. The two airlines together carry over 50 percent of the domestic passengers in Sweden. In general, ticket prices have increased since deregulation, however, on certain routes to major cities, ticket prices have dropped thanks to low-cost carriers entering the market. ■

Figure 1: Passenger Development 1970–2009



The Swedish Transport Agency Aviation Department Analysis Section receives approximately 4,000 Aviation Safety Reports (ASRs) per year, listing occurrences ranging from minor incidents to serious accidents. Mandatory reporting of occurrences, and the individuals responsible for reporting them, are detailed in Swedish Aviation legislation and its Rules and Regulations for Aviation. These rules are based on a European Union Directive dating from 2002 (42/2002).

Ensuring the Safety of Sweden's Skies

Flying is dangerous—*that's why it's so safe!*

In order to attain a better grasp of the meaning of this aviation paradox, it's necessary to examine the past. Although the development of aviation is littered with incidents and accidents, lessons-learned have led to increased safety. It is thanks to continuing improvements that aviation has become the safest mode of transportation available today.

Aviation accidents have occurred ever since the days of the Wright brothers, when aircraft were relatively simple machines. In the aftermath of an accident aircraft were repaired, if possible, and returned to the skies shortly thereafter, without

much thought or effort being expended to thoroughly establishing the cause(s) of the accident.

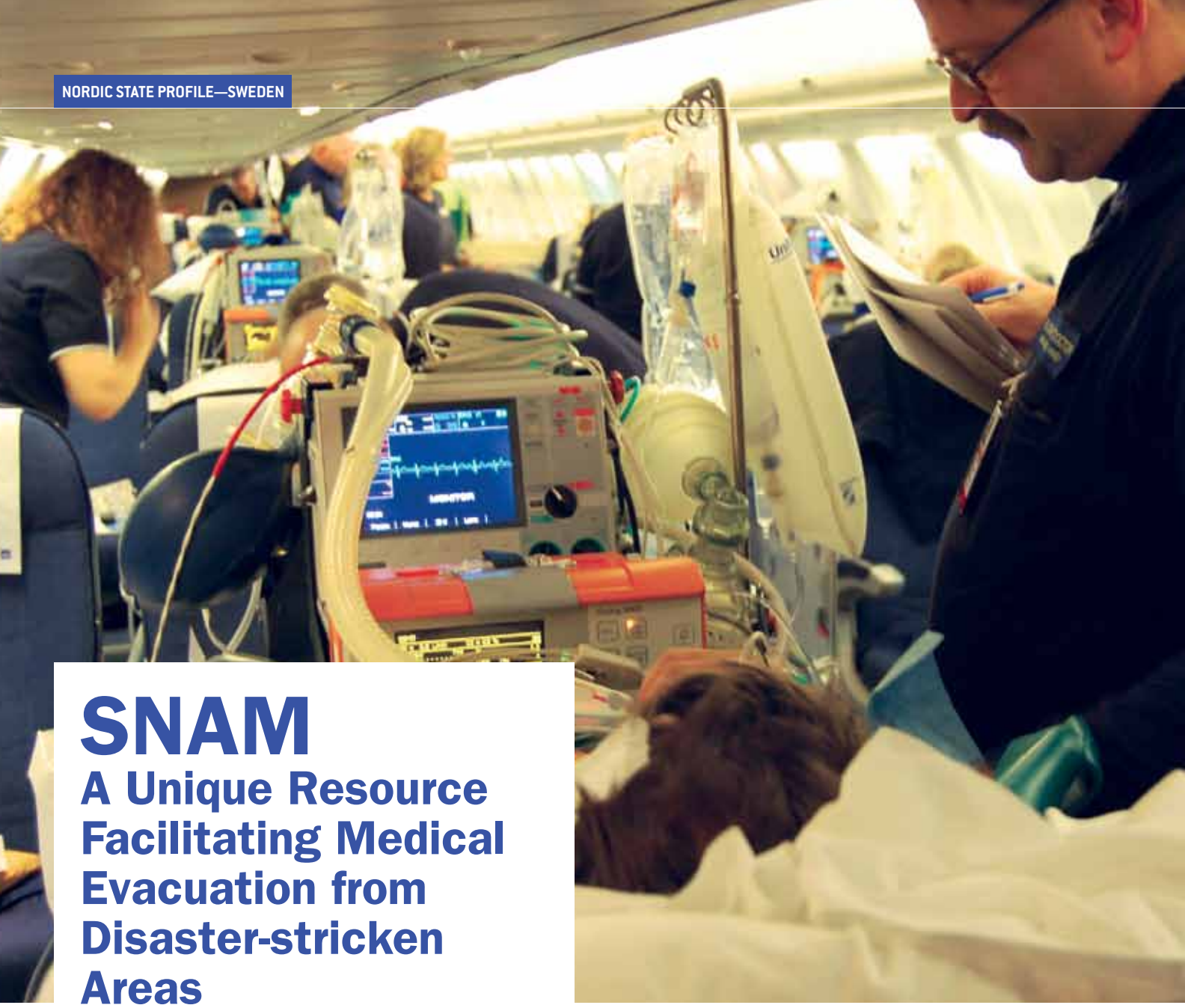
"In the area of aviation safety, we are currently working on an all-European State Safety Programme," began Lena Byström Möller, Civil Aviation Director at the Swedish Transport Agency. "Since we share this common activity, it is of the utmost importance that we also share the same goals when it comes to improved safety. In this context, it is also important that we take advantage of the experience obtained through our occurrence reporting system—and this is a matter that needs to be resolved globally. Safety culture matters will become increasingly important for a long time to come."

Routines for Current Swedish Safety Programmes

The Analysis Section at the Swedish Transport Agency is responsible for administering and analyzing the Aviation Safety Reports (ASRs) pertaining to Swedish operations. The Swedish Transport Agency Aviation Department Analysis Section receives approximately 4,000 ASRs per year. These reports list occurrences ranging from minor incidents to serious accidents. Mandatory reporting of occurrences, and the individuals responsible for reporting them, are detailed in Swedish Aviation legislation and the Rules and Regulations for Aviation. These rules are based on a European Union Directive dating from 2002 (42/2002).

Each reported event is analyzed and classified in terms of seriousness by a flight safety analyst, who also recommends the appropriate implementation of proactive safety measures. In cases where the event might call for a deeper and/or additional investigation, the report is also distributed to the Swedish Accident Investigation Board. The flight safety analysts within the section have operational experience as pilots with a background in commercial aviation operations and air traffic controllers. The section also has a human factors specialist.

Each of the submitted reports is routinely coded, in accordance with the ADREP taxonomy, and the information is subsequently stored in the ECCAIRS database. Flight safety-related trends can be diagnosed and analyzed from these statistics—which also form the basis for decisive and timely measures in specific target areas. The agency, for example, has seen evidence of a disturbingly sharp rise in the number of airspace infringements over the past few years. Consequently they have initiated an investigation whose mandate is to identify the cause(s) and propose suitable improvement measures. ■



SNAM
A Unique Resource Facilitating Medical Evacuation from Disaster-stricken Areas

If a major accident or disaster should occur in Sweden and the affected community's normal resources for patient transport do not suffice, the Swedish National Air Medevac, or SNAM, becomes the resource of choice for aid and assistance.

SNAM can be employed nationally as well as internationally for both civil and military incidents, transporting victims of major accidents in one part of Sweden to the nearest Swedish facility to assist them, as well as carrying foreign patients who need to be evacuated from a distant country which has been hard hit by a disaster or terror attack. A recent example of SNAM in action internationally occurred in December, 2008, when SNAM personnel and planes transported wounded Britons and Spaniards to Great Britain for continued medical care after the major terror attack in Bombay.

SNAM generally transports stable patients who have already received treatment in hospitals but need to be moved for additional assistance. It is not an air ambulance for patients with emergency or acute conditions. The responsibility of administrating SNAM and its readiness efforts rests with the Swedish Transport Agency.

Major Players in the SNAM System

The **Swedish Transport Agency**, in accordance with its instructions from the Swedish Government, is responsible for:

"…maintaining readiness in order to, in consultation with the Swedish Civil Contingencies Agency and the National Swedish Board of Health and Welfare, decide on and carry out airborne patient transport"

SNAPSHOT OF AN SNAM 'FLYING HOSPITAL'

During a SNAM response a regular passenger airplane is used, namely a Boeing 737-800. The airplane is built and equipped with:

- Six intensive care units for those seriously injured.
- Six regular stretchers for those mildly injured.
- Approximately 20 seats for ambulatory patients and relatives.

On board the plane there are specially-trained, experienced personnel, including:

- Eleven nurses.
- Nine doctors.
- One mission coordinator (representing the Swedish Transport Agency).
- One turnaround coordinator.
- One medical technician.
- One flight technician.
- Air crew.

This mandate therefore formalizes SNAM and its mission.

The **Västerbotten County Council** (VLL) trains and is responsible for SNAM medical personnel. SAS in accordance with an agreement is responsible for the flights. The **Swedish Civil Contingencies Agency** furnishes the mission coordinator.

How SNAM Functions

When a need for SNAM arises a series of responses is immediately initiated to satisfy the requirements of the emergency mission.

The Aeronautical Rescue Coordination Centre (ARCC), which is manned around the clock, receives the initial enquiries and provides preliminary data to the Swedish Transport Agency's point of contact.

When the decision on an air medevac is made, the airplane to be used is flown to Stockholm Arlanda Airport for any required remodelling. The medical personnel are simultaneously activated and transported to Arlanda. A mission coordinator then arrives and required staffers are assembled at a central management location at Arlanda. These personnel are comprised of technicians and experts from the Swedish Transport Agency, which leads the effort, and representatives for care providers (VLL) and the airline (SAS).

When the plane is ready, medicine and other medical care materials are loaded and personnel board the aircraft. Depending on the flight and which patients will be transported to what location, contacts with appropriate officials and facilities are established, for example hospitals, embassies and other authorities. Arlanda Airport and its resources functions as a hub during the mission.

When required, a reconnaissance team can be sent out to the site where the patients are to be picked up. The purpose of this function is to clarify the patients' status and the capability to be transported as well as preparing for the arrival of the SNAM plane so that it remains on the ground for the shortest time possible. The SNAM stretchers can be lifted out of the plane and transported to the hospital to pick-up and drop-off patients. These intensive care stretchers have batteries as well as oxygen for such transports.

SNAM-retrofitted aircraft generally have a range of approximately 3000 km without intermediate landings, but can of course fly much longer stretches with refuelling stops, changes of pilots, etc. ■

About us:
The Swedish Transport Agency

The Swedish Transport Agency was established on January 1, 2009. It constantly seeks to achieve the most accessible, high quality, secure and environmentally sustainable rail, air, sea and road transport. The agency has overall responsibility for drawing up regulations and ensuring that authorities, companies, organizations and citizens abide by them.

Sweden's Civil Aviation Department formulates regulations, examines and grants permits, and assesses civil aviation operations and infrastructure with particular regard to safety and security. It also monitors developments in the aviation market.

The Civil Aviation Department is located in Norrköping. Mrs. Lena Byström Möller was appointed Director, Civil Aviation, on January 1, 2009.

Lena Byström Möller, Director, Sweden Civil Aviation Department

Journalists and guests gather just prior to the presentation of the most recent Swedish Presidency at the EU in 2009.

Photo courtesy EU.

A Look Back: Sweden and the EU, 2001

The last time Sweden held the EU Presidency was in the first six months of 2001. At that time, the EU consisted of 15 Member States, a number that has now increased to 27. Expansion of the EU was one of Sweden's priorities and an issue to which it was strongly committed when it assumed the EU Presidency.

Most people will remember the civil disturbances in Göteborg in June of 2001, in connection with the EU summit meeting held there and the visit by George W. Bush, but not everyone will remember which issues were at the top of the agenda for aviation in 2001.

For this special Nordic profile Sweden looks back at some of the major issues that were on the broader Swedish and EU agendas during this crucial moment in aviation history.

Sweden's priorities in 2001 were characterized by the three 'Es': Employment; Enlargement; and the Environment. In the area of civil aviation, the environmental issues of noise and emissions attracted considerable attention. Noise around airports was a particularly big problem facing several EU Member States and agreement was reached on the need to reduce noise levels at the Transport Ministers' meeting in April, 2001.

With regard to the United States, a dispute was in progress that had started in March, 2000, when the United States brought the EU Member States before the ICAO Council with respect to the EU's 'hush-kit' regulation from 20 April, 1999. This regulation[1] limited the possibility of adding further hush-kitted aircraft to the European aircraft register as well as the use of non-EU registered hush-kitted aircraft at European airports after 2002.

[1]Regulation 925/1999

Most of the affected aircraft were of American manufacture and the United States claimed that the regulation unilaterally prescribed standards that were inconsistent with Annex 16 of the Chicago Convention (as it excluded aircraft which met the applicable standards from the market). The United States also considered the regulation to be discriminatory, as it limited the use of hush-kitted aircraft based on the country in which the aircraft was registered, and the regulation had a disparate impact on American interests.

This issue was finally resolved in 2002 when the EU withdrew the 'hush-kit' regulation and replaced it with Directive 2002/30/EC on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Community airports. This Directive included a 'balanced approach' that enables big airports to introduce certain operational restrictions in order to limit the effects of noise.

One of the biggest issues in other civil aviation areas in 2001 was the establishment of EASA.[2] Discussions here centred on the scope of the EASA regulations along with the aims and types of inspections it would perform. A preliminary agreement was reached under the Swedish Presidency regarding the new agency.[3]

The Council of Transport Ministers also adopted a Resolution in April, 2001, with respect to the European satellite navigation system, Galileo. This formed the basis on which to proceed with the development phase.

The problem of airspace congestion and consequent delays had been causing difficulties for European commercial aviation for a long time, and a group of experts had been working on a proposal to improve the efficiency of European air traffic control. In March, 2001, the Commission confirmed its aim to establish a single European sky and presented a proposal based on the group's report in 2001.

This eventually led to the so-called 'Single Sky Regulations'. These regulations have been reviewed in connection with the transfer of safety-related tasks, in the fields of aerodromes and air traffic management/air navigation services, to EASA.

Passenger rights were another important issue in 2001. ECAC[4] and the Commission, together with consumer organisations, airport and airlines, prepared voluntary commitments to improve service levels for passengers. The undertakings were presented in a joint ECAC/EU dialogue in Lisbon in May, 2001, and covered areas such as information and assistance to passengers in the case of delayed or cancelled flights, information on the lowest available fares, on-time baggage delivery, etc.

Another important step to promote passenger rights was taken by the EU Council at the Transport Ministers' Meeting in April, 2001, when the decision was taken to ratify the Montreal Convention with respect to airlines' responsibility for damage for the purpose of incorporating the relevant sections of the Convention into EU legislation at a later date.

Six months after the Swedish EU Presidency had ended, the terrorist attacks of September 11, 2001, occurred in the United States. They had a powerful influence on aviation security measures and, in the long run, also on passengers.

Issues on the Agenda During the Current Swedish Presidency

On May 12, 2009, the EU Commission put forward a proposal for a Directive on Aviation Security Charges. The question of how aviation security measures should be financed has engaged the European Parliament, which considers that Member States should take greater responsibility for financing. The Council has not accepted such a solution. Instead, the Commission was given the task of preparing a report on the principles that determine how measures should be financed and how to ensure transparency in the various systems. The Commission presented its report in February, 2009. This was followed, later in the spring, by the above-mentioned Directive proposal, which is now being dealt with during the Swedish Presidency.

On October 29, 2009, the Commission put forward a proposal for a Regulation on investigation and prevention of accidents and incidents in civil aviation. The proposal is currently being discussed within the Council Working Party on Aviation.

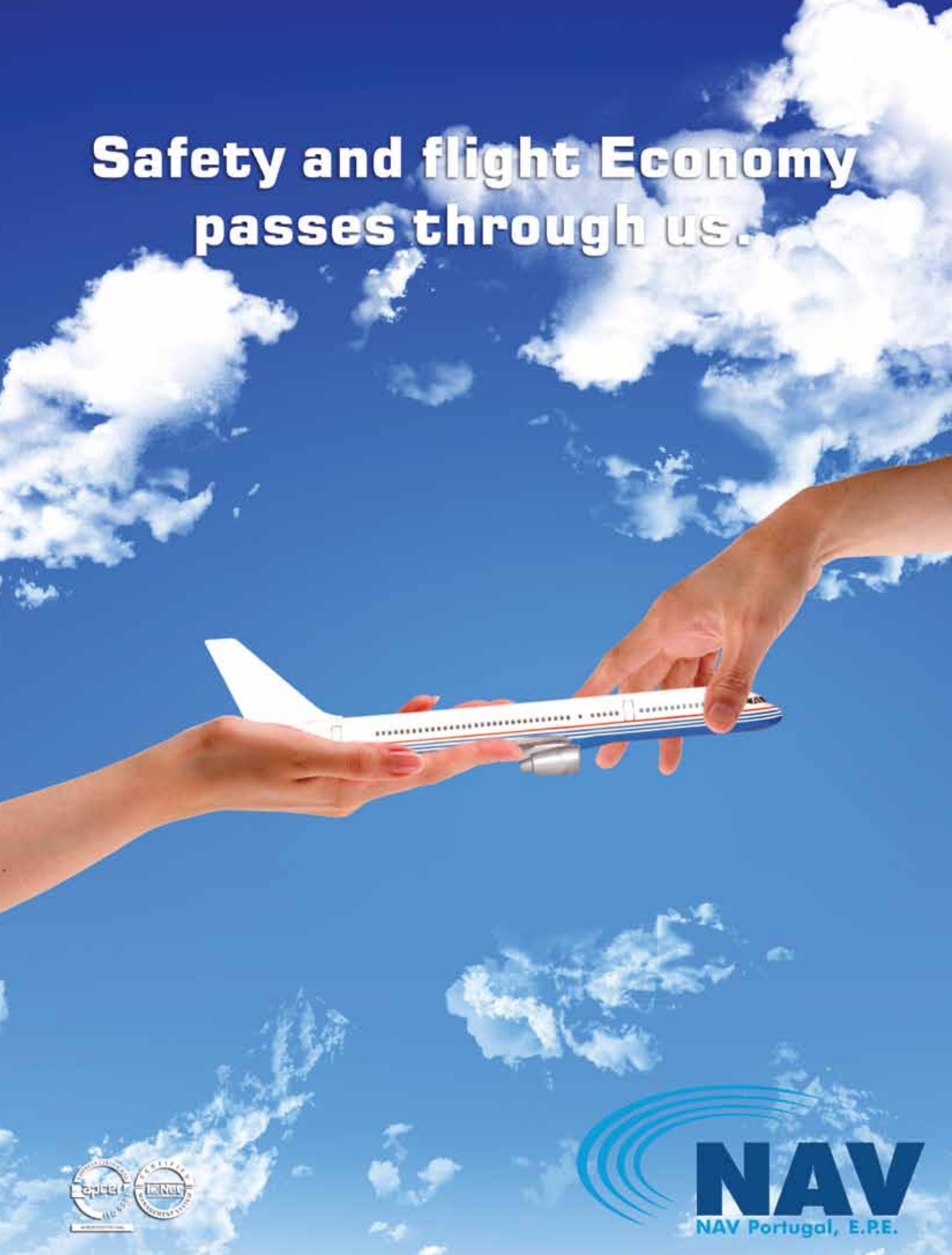
The negotiations with the United States on a comprehensive air transport agreement are continuing during the Swedish Presidency. Other countries on the negotiating list during this period are Israel, Tunisia, Jordan, Georgia, Ukraine, Lebanon, Australia and New Zeeland.

Furthermore, a mandate for the Commission to negotiate certain aspects, on behalf of the Community with ICAO, has been dealt with within the Council Working Party on Aviation. This is expected to have been on the agenda for the next Transport, Telecommunications and Energy Council in December, 2009. In addition, a mandate for the Commission to open negotiations on a Memorandum of Cooperation in Civil Aviation Research and Development with the FAA of the United States (SESAR/NextGen) and a mandate for the Commission to negotiate a bilateral agreement on civil aviation safety with Brazil, have been approved by the Council.

During the Swedish Presidency, the EU Council Working Party on Aviation is being led by the Swedish attaché in Brussels, Tomas Brolin. Staff from the Ministry of Enterprise, Energy and Communication is representing Sweden in the Working Party on Aviation, assisted by experts from the Civil Aviation Department of the Swedish Transport Agency. ■

[2]European Aviation Safety Agency
[3]This work gradually led to the European Parliament and Council Directive (EC) 1592/2002 dated 15 July 2002.
[4]European Civil Aviation Conference

Safety and flight Economy passes through us.



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