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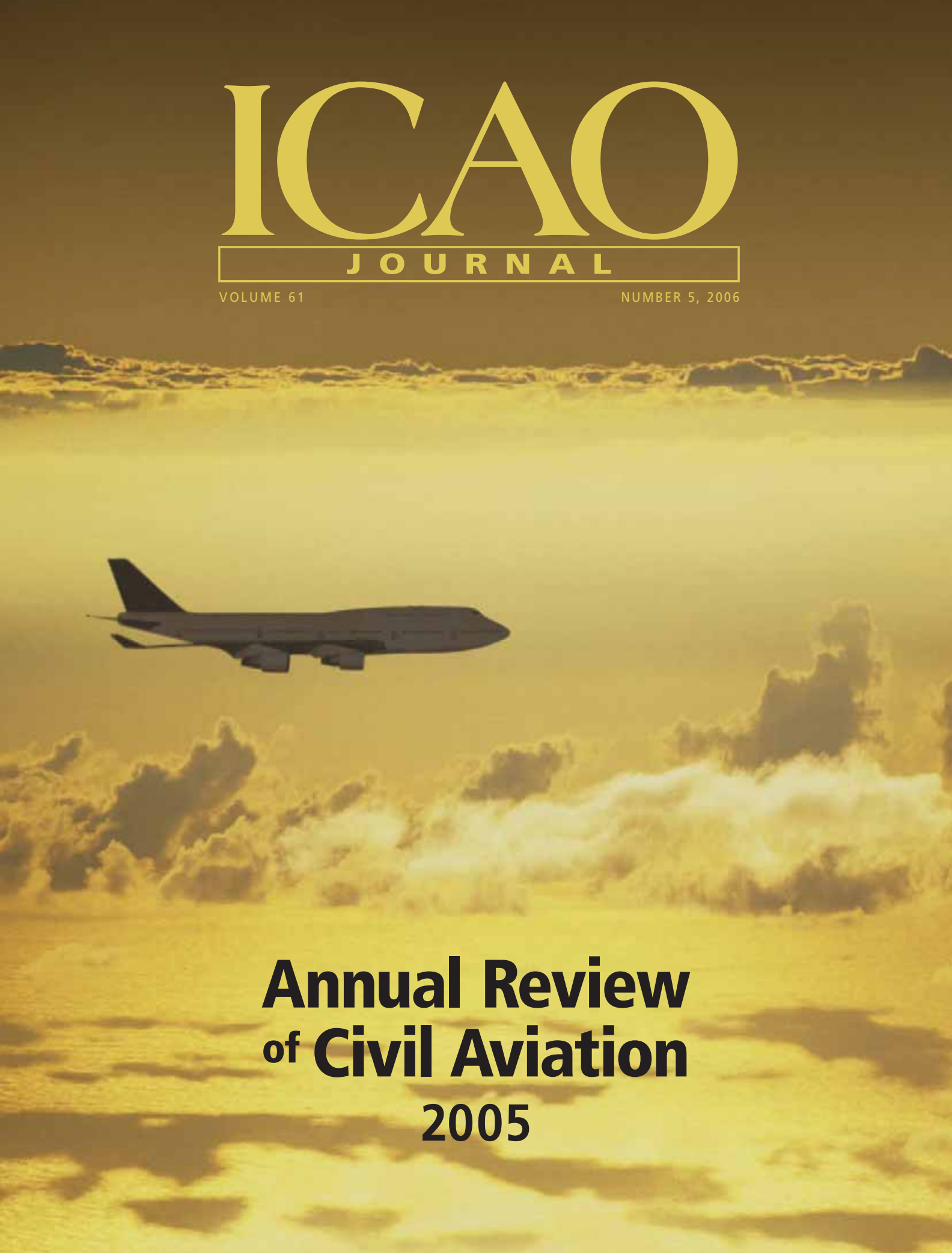

# Annual Review of Civil Aviation 2005

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# ICAO Journal

The magazine of the International Civil Aviation Organization

**VOL. 61, NO. 5** **SEPTEMBER/OCTOBER 2006**

**SPECIAL REPORT • ANNUAL REVIEW OF CIVIL AVIATION**

ICAO's review of air transport developments in 2005, as well as traffic and financial trends and forecasts until 2008, begins on page 6.



**ICAO UPDATE**



**COVER** *(photo by Bill Brooks/Masterfile)*

As highlighted by our annual review of civil aviation, the world's scheduled airlines last year transported more than two billion people for the first time, while also posting a combined operating profit of 1 percent of operating revenues — despite a substantial increase in the cost of jet fuel. Included in the special report beginning on page 6 is a commentary on the correct method for calculating air carrier capacity (see box, page 18).

## Promoting the Development of International Civil Aviation

The International Civil Aviation Organization, created in 1944 to promote the safe and orderly development of civil aviation worldwide, is a specialized agency of the United Nations. Headquartered in Montreal, ICAO develops international air transport standards and regulations and serves as the medium for cooperation in all fields of civil aviation among its 189 Contracting States.

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**ICAO Headquarters**

999 University Street
Montreal, Quebec
Canada H3C 5H7
Telephone: 514-954-8219
Facsimile: 514-954-6077
E-mail: icaohq@icao.int
Website: www.icao.int

**REGIONAL OFFICES**

*Asia and Pacific Office*
*Bangkok, Thailand*
Telephone: + 662-537-8189
Facsimile: + 662-537-8199
E-mail:
icao_apac@bangkok.icao.int

*Eastern and Southern African Office*
*Nairobi, Kenya*
Telephone: + 254-20-7622-395
Facsimile: + 254-20-7623-028
E-mail: icao@icao.unon.org

*European and North Atlantic Office*
*Paris, France*
Telephone: + 33-1-46-41-85-85
Facsimile: + 33-1-46-41-85-00
E-mail: icaoeurnat@paris.icao.int

*Middle East Office*
*Cairo, Egypt*
Telephone: + 202-267-4841
Facsimile: + 202-267-4843
E-mail: icaomid@cairo.icao.int
Website: www.icao.int/mid

*North American, Central American and Caribbean Office*
*Mexico City, Mexico*
Telephone: + 52-55-52-50-32-11
Facsimile: + 52-55-52-03-27-57
E-mail: icao_nacc@mexico.icao.int

*South American Office*
*Lima, Peru*
Telephone: + 51-1-575-1646
Facsimile: + 51-1-575-0974
E-mail: mail@lima.icao.int
Website: www.lima.icao.int

*Western and Central African Office*
*Dakar, Senegal*
Telephone: + 221-839-93-93
Facsimile: + 221-823-69-26
E-mail: icaodkr@icao.sn


# ICAO Journal


*Editor:* Eric MacBurnie
*Editorial Assistant:* Regina Zorman
*Production Clerk:* Arlene Barnes
*Design Consultant:* François-B. Tremblay


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**ADVERTISING REPRESENTATIVE:** Yves Allard, FCM Communications Inc., 835 Montarville St., Longueuil, Quebec, Canada J4H 2M5. Telephone: +1 (450) 677-3535; Facsimile: +1 (450) 677-4445; e-mail: fcmcommunications@ videotron.ca.

**EDITORIAL OFFICE:** International Civil Aviation Organization, 999 University St., Room 1205, Montreal, Quebec, Canada H3C 5H7. Telephone: +1 (514) 954-8222; Facsimile: +1 (514) 954-6376; e-mail: emacburnie@icao.int.

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- Annex 6 – Operation of Aircraft
- Annex 7 – Aircraft Nationality and Registration Marks
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- Annex 10 – Aeronautical Telecommunications
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- Annex 13 – Aircraft Accident and Incident Investigation
- Annex 14 – Aerodromes
- Annex 15 – Aeronautical Information Services
- Annex 16 – Environmental Protection
- Annex 17 – Security: Safeguarding International Civil Aviation Against Acts of Unlawful Interference
- Annex 18 – The Safe Transport of Dangerous Goods by Air

# ANNUAL REVIEW OF CIVIL AVIATION 2005

THE world's scheduled airlines last year transported more than two billion passengers for the first time, while also posting a combined operating profit of 1 percent of operating revenues, no small feat considering that the cost of jet fuel, which now constitutes roughly one-fifth of an airline's total operating expenses, rose by almost 50 percent compared with 2004.

The year was characterized by healthy traffic growth, with total tonne-kilometres performed rising by more than 6 percent to over 487 billion. The greatest growth was experienced in passenger traffic, with passenger load factor rising by 2 percent to 75 percent as a result of efficient capacity management. Freight traffic also grew, but modestly compared with 2004, and mail tonne-kilometres performed — no longer a significant percentage of overall traffic — also rose slightly. International traffic growth was stronger than the overall figure, with total tonne-kilometres performed growing by approximately 7 percent, and passenger-kilometres performed expanding by 9 percent. The volume of international passengers grew at nearly the same rate to reach a record 704 million.

While traffic growth in 2005 was not as strong as in the previous year, 2004 far exceeded expectations, in effect compensating for a drop in traffic in 2001, followed by sluggish growth in 2002 and 2003.

Financially, the world's airlines saw a slight improvement over 2004, based on a substantial growth in operating revenues. These rose by $34.5 billion during 2005 to give an operating result of $4.3 billion, compared with a profit of $3.3 billion in the previous year, when the industry returned to the black for the first time since 2000 (all financial figures in U.S. currency). The net financial result also represented an improvement over 2004, although still in the red, with a loss of some $3.2 billion posted in 2005.

The positive operating result was achieved despite a substantial rise in total operating costs caused chiefly by the upward trend in the price of oil. Airlines managed to limit their unit costs to 4 percent over 2004, an increase that was more than compensated for by the strong growth in traffic and the 4 percent rise in unit revenues or yield.

During 2006, new security concerns and the possible introduction of more stringent aviation security measures following the terrorist plot uncovered by U.K. authorities in August could act as a dampener on traffic growth as well as on the profitability of a resurging industry. Without this factor at play, however, ICAO predicts that scheduled airline passenger traffic will continue to grow strongly, with some 6 percent growth in 2006, followed by 5.8 percent and 5.6 percent growth in 2007 and 2008, respectively.

SkyEurope Airlines B737-700

The industry continued to express confidence in its future growth and prosperity by ordering a substantial number of new jet aircraft. The order book exceeded 2,100 jet transports, more than double the 908 orders received by manufacturers in 2004. The financial commitment represented by the 2005 order book was some $160 billion. New aircraft orders have been increasing progressively since 2002, when orders for fewer than 500 aeroplanes were placed with manufacturers.

New aircraft deliveries also continued at a strong pace,

with over 900 deliveries in 2005, and a similar number in 2004 and 2003, although slowed somewhat from early in the decade (2000-02), when deliveries of jet transports averaged more than 1,000 aircraft per year.

On the safety front, airline passenger fatalities rose in 2005 to more than 700 fatalities, the result of 18 accidents (compared to nine accidents in 2004). Non-scheduled operations experienced the same number of fatal accidents, leading to more than 270 deaths. The fatality rate also rose in 2005, from 0.01 passenger fatalities per 100 million passenger-kilometres flown in 2004 to 0.02 fatalities per 100 million passenger-kilometres, because of the relatively high number of fatal accidents.

As a result of the unusually high number of fatal accidents experienced in mid-2005, ICAO decided to convene a two-day global conference on aviation safety early in 2006. The meeting of the world's civil aviation leaders at ICAO headquarters in March of this year focused on shaping a renewed global strategy for aviation safety (see "Global safety conference heralds new era of openness," Issue 2/2006, pp 5-7).


The following summary of some of the major developments in 2005, in particular in the areas of airline traffic, airline financial results (page 10), forecasts of airline traffic and financial results for the 2006-08 period (page 15), airlines and their fleets (page 18), safety and security (page 22), environmental protection (page 27), economic regulation of air transport (page 28), technical cooperation (page 30), and air navigation (page 38), was derived in large part from the Annual Report of the Council for 2005 (see box, page 8, on how to obtain this and other ICAO publications). Also included in this year's summary is a look at the method of calculating air carrier capacity (page 18), and the annual summary of the status of general aviation (page 20). This last subject area is based on information provided by international associations representing the general aviation community worldwide.

TRAFFIC RESULTS ▮ The total scheduled traffic carried by the airlines of ICAO member States in 2005 is estimated at 487.7 billion tonne-kilometres performed, an increase of nearly 6 percent over 2004 (a tonne-kilometre is a combined measure of passengers, freight and mail traffic that takes into account the distance flown). The world's airlines carried a total of about 2,022 million passengers and some 38 million tonnes of freight in 2005, compared with 1,888 million passengers and 37 million tonnes of freight in 2004 (see *Table 1*, page 10).

The traffic increase of around 6.3 percent achieved in 2005 over 2004 comes at a time when fuel prices hit record levels, with a 49 percent average increase over 2004, and when carriers in most regions passed on the impact of this increase to passengers by increasing fares. Gross domestic product (GDP) growth rates also showed decline over 2004 levels, noticeably in the United States and Europe. Both these factors would generally have had an adverse effect on traffic, yet in 2005 air carriers were able to achieve traffic growth. This can be mainly attributed to their efforts in managing more effectively capacity offered, reducing controllable costs and restraining fare increases. In addition, higher GDP growth in Asia and the Middle East, together with the emergence of low-cost carriers in these regions, has helped to stimulate traffic growth.

During 2005, the increase in passenger traffic on total scheduled services (8 percent) was somewhat higher than the change in the number of seats offered (up 5.7 percent), thus resulting in an average passenger load factor of 75 percent, up from 73 percent in 2004.

Compared with 2004, international scheduled traffic in 2005 showed a 6.7 percent growth in tonne-kilometres performed, with the number of passengers carried rising by more than 8 percent. Freight tonnes carried on

international services rose by around 4 percent. International traffic accounted for some 59 percent of total passenger-kilometres performed, 83 percent of freight tonne-kilometres performed, and some 65 percent of the total tonne-kilometres performed.

Total domestic traffic in 2005 is estimated at 162.5 billion tonne-kilometres performed, representing an increase of 5.5 percent over 2004.

The worldwide trend in total revenue traffic for the 1996-2005 period is illustrated in *Figures 1* through *6*, while the trend in international revenue traffic over the same period is shown in *Figures 7* through *12*.

Developments in total and international scheduled traffic varied considerably among regions of carrier registration with respect to passengers, freight and mail. In terms of both total and international passenger-kilometres performed, the change in traffic ranged from an increase of some 6.4 percent for the airlines registered in the Latin America and the Caribbean region, to about 14 percent for airlines registered in the Middle East (*Table 2*, page 11).

In terms of the regional distribution of the total scheduled traffic, the airlines of North America dominated with some 33 percent of all traffic in 2005. However, the largest share of international scheduled traffic, about 34 percent, was carried by the airlines of the European region.

Looking ahead, the challenge for air carriers will be to manage the risks associated with fuel costs. Continuing high fuel prices or additional increase in the price of fuel will make it difficult for air carriers to manage the risk resulting from fare increases and the associated potential adverse impact on traffic growth.

The top 10 air carriers in 2005, in terms of total tonne-kilometres performed on scheduled international and domestic services, were American Airlines (the top ranked airline in 2004), with 23.4 billion tonne-kilometres performed, followed by United Airlines, Lufthansa, Delta Air Lines, Air France, British Airways, Singapore Airlines, Federal Express, Northwest Airlines and Japan Airlines. American was also the largest carrier in terms of passenger-kilometres performed (222 billion), while Federal Express was the first place carrier in terms of freight and mail tonne-kilometres performed (14.5 billion).

In international services, the top ranked carrier was Lufthansa (unchanged from the previous year), with 18.7 billion tonne-kilometres performed in 2005. Others, in their order of rank, were Singapore Airlines, British Airways, Air France, Cathay Pacific, KLM, Japan Airlines, Emirates, Korean Air and American Airlines. In terms of passenger-kilometres performed, Lufthansa was also ranked first, with 107.4 billion. For freight and mail traffic, Lufthansa was again the top ranked airline, having recorded 7.8 million tonne-kilometres performed.

Rankings for countries or groups of countries, according to the volume of scheduled traffic generated by their airlines in 2005 (both for total operations and for international services) are presented in *Table 3* on page 12. Specific figures are presented only for those countries whose airlines carried a total of over 130 million tonne-kilometres in 2005. The top five ranked countries, in terms of total tonne-kilometres performed, were the United States, China, Germany, United Kingdom and Japan. The top five ranked countries, in terms of passenger-kilometres performed, were the United States, China, United Kingdom, Germany and Japan.

*Table 4*, on page 13, provides freight tonne-kilometres performed by countries or groups of countries whose airlines carried 25 million freight tonne-kilometres or more in 2005. The top five ranked countries were the United States, Japan, Germany, China and Singapore.

*Non-scheduled traffic.* It is estimated that international non-scheduled passenger-kilometres performed throughout the world declined by some 2 percent compared with 2004, with the share of such traffic being around 10.6 percent of international passenger services. Non-scheduled traffic in Europe remains the largest regional com-

## YEAR IN REVIEW

The *ICAO Journal's* review of civil aviation developments in 2005 is derived in part from the *Annual Report of the Council — 2005* (Document 9862) as well as other information and forecasts prepared annually by the ICAO Air Transport Bureau. Document 9862 and other ICAO publications may be obtained by contacting the Document Sales Unit: telephone +1 (514) 954-8022; facsimile + 1 (514) 954-6769; e-mail sales@icao.int.

More extensive aviation statistics are available to Contracting States as well as regional civil aviation organizations by accessing the ICAO integrated statistical database (ISDB) through the ICAO Secure Net using a standard web browser. Other users can access these data for a fee through http://www.icaodata.com.

Other than the ISDB and various studies undertaken by ICAO, the sources of data appearing here include the most recently available statistics published by the United Nations; BACK Aviation Solutions fleet and airline schedule databases; the Airports Council International (ACI); the Air Transport Association (ATA); the Association of Asia Pacific Airlines (AAPA); the Association of European Airlines (AEA); Avmark Inc.; the International Monetary Fund (IMF); the Organization for Economic Cooperation and Development (OECD); the U.S. Department of Transportation; the World Bank; and the World Trade Organization. The information on general aviation developments was contributed by the International Council of Aircraft Owner and Pilot Associations (IAOPA) and the International Business Aviation Council (IBAC).

It should be noted that all financial figures appearing in this article, unless otherwise stated, are expressed in U.S. currency; also, the value of one billion is equivalent to 1,000 million. Unless otherwise noted, all statistical data are applicable to the 189 ICAO Contracting States; regional breakdowns are by ICAO statistical region; traffic statistics are for scheduled services of commercial air carriers; financial statistics relate to non-scheduled as well as scheduled operations conducted by scheduled airlines; and the expression "tonne-kilometre" refers to metric tonne-kilometre.

All photos featured in this report appear courtesy of Airbus S.A.S. and The Boeing Co., with the exception of the photos of the Bombardier Learjet 60 and Diamond Aircraft Katana that appear on page 30.

ponent of the world charter market.

Domestic non-scheduled passenger traffic is estimated to represent some 7 percent of the total non-scheduled passenger traffic and about 1 percent of total domestic passenger traffic worldwide. Non-scheduled cargo operations tend to be largely of an ad hoc nature, with little information available as to their volume.

*Airport traffic.* The top 25 airports in the world in terms of passenger throughput — 15 of which are located in the United States —handled a combined total of about 1,172 million passengers in 2005, a volume that represented growth of 4.4 percent over 2004. These airports accounted for about one third of the world total of scheduled and non-scheduled passengers, and on average handled about 128,000 passengers per day at each airport, up from the daily volume of 122,000 passengers in 2004.

The 25 busiest airports also handled a combined total of 12 million aircraft movements in 2005, an increase of 2.1 percent over 2004. The average increase in aircraft movements at the 25 busiest airports over the 1996-2005 period was more than 201,000 per year (1.7 percent per annum), while passenger throughput at these airports increased at an average of 23.9 million annually over the same period (2.6 percent per year).

The world's busiest airport last year was Atlanta's (unchanged from 2004), with 85.5 million passengers embarked and disembarked. In order of rank, the other top airports were Chicago O'Hare, with 76.6 million passengers; London Heathrow, with 67.7 million passengers; Tokyo Haneda, with 63.3 million passengers; and Los Angeles International, with 61.5 million passengers. Among the five top-ranked airports, Atlanta Hartsfield-Jackson experienced the greatest annual growth (2.8 percent).

Atlanta Hartsfield-Jackson was also the world's busiest airport in terms of aircraft movements, with 967,700 take-offs and landings last year, and for the first time displaced Chicago O'Hare, whose 942,000 aircraft movements in 2005 represented a decline of 3.9 percent compared with 980,500 movements in 2004. The other top-ranking airports were Dallas-Ft. Worth International, with 705,100 movements, Los Angeles International (633,000 movements) and Denver International (548,300 movements). Of the top five airports, only Atlanta experienced an increase in aircraft movements, showing 1.6 percent growth over 2004. The other four airports experienced a decline in aircraft movements, with Dallas-Ft. Worth International posting the sharpest decrease (down 11.7 percent).


Iberia Airlines A340-300

On the basis of international passenger traffic, the busiest airport last year was London Heathrow, a ranking unchanged from 2004. More than 61 million international passengers embarked and disembarked at that airport, an increase of 1.4 percent over 2004. The next busiest airports were Paris Charles de Gaulle, with 48.8 million international passengers, an increase of 5.5 percent compared with 2004; Frankfurt, with over 44.8 million international passengers, an increase of 3.1 percent;

**Figure 1. Total passengers carried, 1996-2005**

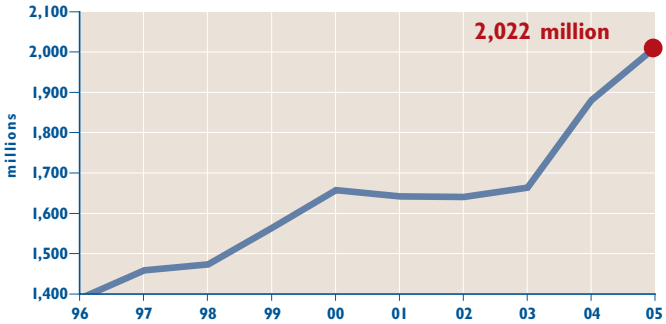



**Figure 2. Total passenger-km performed, 1996-2005**

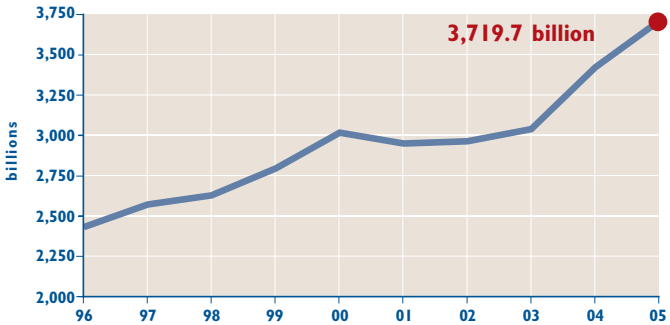


**Table 1. Scheduled services, 2004-05**

| Type of service | Passengers carried (millions) | Passenger-km performed (millions) | Passenger load factor (%) | Freight tonnes carried (millions) | Freight tonne-km performed (millions) | Mail tonne-km performed (millions) | Total tonne-km performed (millions) | Weight load factor (%) |
|---|---|---|---|---|---|---|---|---|
| **INTERNATIONAL** | | | | | | | | |
| 2004 | 647 | 2,015,070 | 74 | 21.8 | 115,120 | 2,830 | 304,920 | 64 |
| 2005 | 704 | 2,197,360 | 75 | 22.6 | 118,480 | 2,980 | 325,250 | 64 |
| Change (%) | 8.8 | 9.0 | | 3.7 | 2.9 | 5.3 | 6.7 | |
| **DOMESTIC** | | | | | | | | |
| 2004 | 1,241 | 1,430,230 | 72 | 14.9 | 23,920 | 1,750 | 153,990 | 58 |
| 2005 | 1,318 | 1,522,340 | 75 | 15.1 | 24,100 | 1,680 | 162,490 | 59 |
| Change (%) | 6.2 | 6.4 | | 1.3 | 0.75 | -4.0 | 5.5 | |
| **TOTAL** (Int'l and domestic) | | | | | | | | |
| 2004 | 1,888 | 3,445,300 | 73 | 36.7 | 139,040 | 4,580 | 458,910 | 62 |
| 2005 | 2,022 | 3,719,700 | 75 | 37.7 | 142,580 | 4,660 | 487,740 | 63 |
| Change (%) | 7.1 | 8.0 | | 2.7 | 2.5 | 1.7 | 6.3 | |

Amsterdam Schiphol, with 44.0 million international passengers, an increase of 4 percent over 2004; and Hong Kong, with 39.8 million international passengers. Of the five biggest airports, Hong Kong demonstrated the greatest annual growth, with an increase of 9.7 percent versus 2004. Also among the top 10 airports for international passengers, in order of rank, were Singapore Changi, London Gatwick, Tokyo Narita, Bangkok and Seoul Incheon.

The top 25 most significant airports in the world, in terms of international passenger throughput, together handled more than 654 million passengers in 2005, representing about 42 percent of the world's total international passenger traffic. The total international passenger traffic at these 25 airports increased by 5.7 percent last year, while aircraft movements related to international services at these same airports registered an increase of only 2.9 percent over 2004.

The highest growth among the top 25 airports was registered in Dubai, where international passenger traffic increased by 14.6 percent. Some European airports also experienced significant growth in international passenger traffic versus 2004; Madrid Barajas posted growth of 10.2 percent, Munich and Milan Malpensa each experienced 9.2 percent growth, and Dublin's traffic rose by 8.1 percent. Airports in Asia also registered major growth in international passenger traffic, rising by 9.7 percent in Hong Kong, 8.4 percent in Taipei, and 8.3 percent at Seoul-Incheon.

Over the 1996-2005 period, the number of international passengers handled by the top 25 airports increased by an average of 4.4 percent per year. Over the same period, movements by aircraft on international services rose by 3.8 percent each year on average.

FINANCIAL RESULTS ▮ Preliminary estimates for 2005 indicate that the world's scheduled airlines as a whole experienced an operating profit of 1 percent of total operating revenues, a slight improvement over the 0.9 percent operating profit achieved in 2004.

The operating revenues of scheduled airlines are tentatively estimated at $413.3 billion in 2005 (all financial figures in U.S. currency), an increase of about 9.1 percent over the $378.8 billion earned in 2004. Operating expenses for these same airlines are tentatively estimated at $409 billion in 2005, an increase of about 8.9 percent over the $375.5 billion incurred in 2004 (see *Table 5*, page 15).

A variance analysis of the increase in operating revenues and expenses over 2004, indicating the causes for

SpiceJet B737-800

Germanwings A319

the variances, is shown in *Table 6* (an article on variance analysis will be published in the *Journal* in early 2007).

As revealed in Table 6, in 2005 operating revenues increased by around $34.5 billion over 2004, mainly through a combination of increases in traffic and yields. In 2005, traffic expressed in terms of total (i.e. passenger plus freight and mail) tonne-kilometres performed grew by around 4.9 percent over 2004, thus generating incremental revenues of around $18.6 billion. Yields (operating revenue per total tonne-kilometres performed) increased by around 4 percent from 77.1 cents in 2004 to 80.2 cents in 2005, thus contributing incremental revenues of around $15.20 billion.

With regard to operating costs, the increase of $33.5 billion over 2004 was mainly the result of increases in capacity offered and unit costs. Capacity offered grew by around 4.6 percent over 2004, thus generating incremental costs of around $17.4 billion. Increases in mainly non-controllable costs (such as fuel) saw unit costs go up by around 4.1 percent from 47.7 U.S. cents in 2004 to 49.7 cents in 2005, pushing total operating costs up by an additional $15.6 billion over 2004.

**Table 2. Growth of traffic by region, 2004-05** (percentage change)

| Region of registration | Passengers carried | Passenger-kilometres | Freight tonne-km | Mail tonne-km | Total tonne-km |
|---|---|---|---|---|---|
| **INTERNATIONAL AND DOMESTIC** | | | | | |
| Africa | 11.6 | 12.1 | 6.1 | 18.8 | 11.7 |
| Asia and Pacific | 6.3 | 7.2 | 3.9 | 7.8 | 6.0 |
| Europe | 8.5 | 9.0 | 2.5 | 0.8 | 7.0 |
| Middle East | 7.7 | 13.6 | 12.4 | -0.4 | 13.1 |
| L. America/Caribbean | 5.6 | 6.4 | -2.7 | 10.0 | 4.1 |
| North America | 6.5 | 7.0 | -0.6 | -2.6 | 5.0 |
| **Worldwide** | **7.1** | **8.0** | **2.5** | **1.9** | **6.3** |
| **INTERNATIONAL** | | | | | |
| Africa | 8.7 | 11.4 | 6.3 | 28.9 | 10.9 |
| Asia and Pacific | 6.3 | 6.1 | 3.4 | 6.1 | 4.9 |
| Europe | 9.8 | 10.1 | 2.6 | 3.9 | 7.5 |
| Middle East | 6.0 | 14.0 | 12.3 | -0.6 | 13.3 |
| L. America/Caribbean | 4.4 | 6.7 | -3.8 | 11.1 | 3.5 |
| North America | 12.0 | 9.8 | -0.1 | 4.6 | 5.8 |
| **Worldwide** | **8.8** | **9.0** | **2.9** | **5.1** | **6.7** |

The increase in unit costs can mainly be attributed to higher fuel costs (on average around 49 percent higher than 2004). Some airlines, especially in Europe and a few in North America, did manage to hedge against the risk associated with fuel price movements, however this was not the norm for most air carriers in other regions. This alone would have caused unit costs to increase much more than the estimated 4.1 percent had it not been for the efforts of air carriers to reduce their controllable costs, most notably distribution costs, passenger service costs and routine back office costs.

The figure on page 16 shows some individual costs expressed as a percentage of total operating expenses, with the share of fuel costs (basically an uncontrollable cost) showing a significant increase, from 11 percent of total operating expenses in 1999 to around 19.5 percent in 2005. Airlines responded to this challenge by using technology and improving processes to reduce some controllable costs, notably that of distribution (down from 13.7 percent in 1999 to around 9.5 percent in 2005) and to a lesser extent passenger service costs, down from around 11 percent in 1999 to 9.5 percent in 2005. (The decrease in the share of these items is also shown, but to a lesser extent, when they are computed as a percentage of total operating expenses minus fuel costs.) While the reduction shown in distribution costs could be in part attributed to the wider use of e-ticketing and changes in distribution networks, it may also have been impacted by the growing proportion of so-called low-cost carriers (LCCs) in the ICAO data.

In 2005, the world's airlines were able to maintain and slightly improve their operating profit over 2004 despite


Xiamen Airlines B737-800


Alitalia A321

## Table 3. Tonne-kilometres and passenger-kilometres performed, 2005 (scheduled services)

| Country or group of countries whose airlines performed more than 130 million total tonne-kilometres | TOTAL TONNE-KILOMETRES PERFORMED (millions)[1] | | | | | | PASSENGER-KILOMETRES PERFORMED (millions)[1] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total operations | | | International operations | | | Total operations | | | International operations | | |
| | Rank in 2005 | Estimate 2005 | Change vs 2004 (%) | Rank in 2005 | Estimate 2005 | Change vs 2004 (%) | Rank in 2005 | Estimate 2005 | Change vs 2004 (%) | Rank in 2005 | Estimate 2005 | Change vs 2004 (%) |
| United States | 1 | 152 009 | 5 | 1 | 51 792 | 6 | 1 | 1 244 694 | 7 | 1 | 337 354 | 10 |
| China[2] | 2 | 25 765 | 12 | 10 | 8 387 | 9 | 2 | 201 961 | 15 | 15 | 44 603 | 14 |
| Hong Kong SAR[3] | | 14 606 | 13 | | 14 606 | 13 | | 70 603 | 14 | | 70 603 | 14 |
| Macao SAR[4] | | 410 | 28 | | 410 | 28 | | 2 406 | 13 | | 2 406 | 13 |
| Germany | 3 | 25 457 | 3 | 2 | 24 509 | 3 | 4 | 182 508 | 7 | 3 | 172 799 | 6 |
| United Kingdom | 4 | 24 008 | 8 | 3 | 23 173 | 8 | 3 | 200 333 | 10 | 2 | 190 543 | 10 |
| Japan | 5 | 21 992 | 0 | 4 | 15 691 | -1 | 5 | 153 289 | 1 | 7 | 82 227 | 1 |
| France | 6 | 18 294 | 8 | 5 | 15 575 | 12 | 6 | 135 017 | 9 | 4 | 107 526 | 15 |
| Singapore | 7 | 14 913 | 5 | 6 | 14 913 | 5 | 9 | 82 904 | 5 | 5 | 82 904 | 5 |
| Republic of Korea | 8 | 13 687 | -3 | 8 | 13 053 | -3 | 13 | 69 292 | 3 | 9 | 62 896 | 5 |
| Netherlands | 9 | 13 235 | 6 | 7 | 13 234 | 6 | 10 | 82 269 | 8 | 6 | 82 258 | 8 |
| Gulf States[5] | 10 | 12 552 | 15 | 9 | 12 457 | 14 | 11 | 78 481 | 15 | 8 | 77 704 | 14 |
| Australia | 11 | 12 081 | 9 | 11 | 7 984 | 10 | 7 | 99 614 | 5 | 10 | 56 275 | 3 |
| Canada | 12 | 10 590 | 7 | 13 | 6 335 | 6 | 8 | 94 680 | 9 | 11 | 55 650 | 9 |
| Spain | 13 | 7 459 | 9 | 16 | 5 265 | 8 | 12 | 70 975 | 11 | 12 | 48 008 | 10 |
| Russian Federation | 14 | 7 285 | 3 | 19 | 3 339 | 4 | 14 | 63 192 | 2 | 19 | 25 413 | 1 |
| Malaysia | 15 | 7 103 | 6 | 12 | 6 445 | 7 | 18 | 49 578 | 11 | 16 | 42 416 | 12 |
| Thailand | 16 | 6 646 | 1 | 14 | 6 317 | 2 | 16 | 50 809 | -1 | 13 | 47 385 | -1 |
| Italy | 17 | 6 426 | 14 | 15 | 5 278 | 15 | 15 | 51 127 | 18 | 17 | 39 141 | 22 |
| Brazil | 18 | 6 173 | 6 | 20 | 3 174 | 5 | 17 | 50 689 | 7 | 22 | 22 733 | 7 |
| Luxembourg | 19 | 5 201 | 10 | 17 | 5 201 | 10 | 108 | 566 | -1 | 103 | 566 | -1 |
| India | 20 | 4 980 | 17 | 24 | 2 918 | 17 | 19 | 46 302 | 19 | 18 | 25 632 | 19 |
| Ireland | 21 | 4 156 | 29 | 18 | 4 156 | 29 | 20 | 44 792 | 29 | 14 | 44 792 | 29 |
| Mexico | 22 | 3 869 | 6 | 31 | 2 206 | 11 | 21 | 34 123 | 7 | 28 | 17 713 | 14 |
| Scandinavia[6] | 23 | 3 720 | 3 | 22 | 3 051 | 1 | 22 | 30 701 | 1 | 20 | 23 881 | -1 |
| South Africa | 24 | 3 580 | 9 | 25 | 2 760 | 5 | 23 | 29 191 | 12 | 23 | 21 289 | 8 |
| New Zealand | 25 | 3 486 | 5 | 21 | 3 133 | 5 | 25 | 26 093 | 6 | 21 | 22 766 | 6 |
| Saudi Arabia | 26 | 3 174 | 6 | 29 | 2 351 | 5 | 27 | 23 793 | 5 | 30 | 15 534 | 4 |
| Switzerland | 27 | 2 994 | 0 | 23 | 2 979 | 0 | 28 | 20 476 | -1 | 24 | 20 334 | -1 |
| Indonesia | 28 | 2 924 | -1 | 42 | 928 | -14 | 24 | 28 243 | -1 | 40 | 7 589 | -14 |
| Turkey | 29 | 2 814 | 15 | 30 | 2 247 | 15 | 26 | 24 297 | 19 | 26 | 18 259 | 18 |
| Israel | 30 | 2 710 | 1 | 26 | 2 683 | 1 | 33 | 16 362 | 12 | 29 | 16 057 | 12 |
| Austria | 31 | 2 542 | 7 | 27 | 2 529 | 7 | 29 | 18 835 | 7 | 25 | 18 713 | 8 |
| Qatar | 32 | 2 494 | 58 | 28 | 2 494 | 58 | 30 | 17 890 | 47 | 27 | 17 890 | 47 |
| Chile | 33 | 2 336 | 3 | 32 | 1 961 | 2 | 36 | 14 067 | 9 | 35 | 10 529 | 9 |
| Philippines | 34 | 2 085 | 8 | 33 | 1 773 | 9 | 31 | 17 123 | 9 | 32 | 14 022 | 9 |
| Colombia | 35 | 1 982 | 3 | 36 | 1 455 | 1 | 39 | 9 688 | 7 | 54 | 4 782 | 9 |
| Portugal | 36 | 1 789 | 4 | 34 | 1 547 | 5 | 32 | 16 834 | 5 | 31 | 14 519 | 6 |
| Pakistan | 37 | 1 708 | 5 | 35 | 1 504 | 5 | 35 | 14 304 | 6 | 33 | 12 496 | 7 |
| Argentina | 38 | 1 481 | 5 | 41 | 948 | 3 | 34 | 15 025 | 4 | 36 | 9 224 | 2 |
| Finland | 39 | 1 439 | 7 | 37 | 1 348 | 8 | 38 | 11 900 | 7 | 34 | 10 870 | 9 |
| Egypt | 40 | 1 194 | 13 | 38 | 1 129 | 13 | 41 | 9 401 | 5 | 37 | 8 720 | 5 |
| Iran (Islamic Republic of) | 41 | 1 169 | 3 | 56 | 539 | 6 | 37 | 12 194 | 5 | 51 | 5 250 | 7 |
| Belgium | 42 | 1 126 | 0 | 39 | 1 126 | 0 | 55 | 4 918 | 4 | 53 | 4 918 | 4 |
| Sri Lanka | 43 | 1 089 | 2 | 40 | 1 089 | 2 | 43 | 8 599 | 3 | 38 | 8 599 | 3 |
| Viet Nam | 44 | 1 060 | 8 | 45 | 790 | 6 | 42 | 9 219 | 8 | 42 | 6 878 | 7 |
| Greece | 45 | 956 | 3 | 47 | 787 | 4 | 40 | 9 410 | 3 | 39 | 7 656 | 3 |
| Kuwait | 46 | 905 | 1 | 43 | 905 | 1 | 44 | 7 282 | 0 | 41 | 7 282 | 0 |
| Kenya | 47 | 850 | 26 | 44 | 826 | 26 | 46 | 6 540 | 23 | 44 | 6 292 | 23 |
| Bangladesh | 48 | 796 | 7 | 46 | 789 | 7 | 52 | 5 381 | 7 | 49 | 5 317 | 7 |
| Mauritius | 49 | 778 | 5 | 48 | 774 | 6 | 48 | 6 266 | 9 | 45 | 6 217 | 9 |
| Ethiopia | 50 | 725 | 22 | 50 | 713 | 22 | 50 | 5 418 | 23 | 50 | 5 286 | 24 |
| Jordan | 51 | 716 | -3 | 49 | 716 | -3 | 51 | 5 390 | 1 | 48 | 5 389 | 1 |
| Morocco | 52 | 714 | 11 | 51 | 687 | 11 | 47 | 6 434 | 16 | 46 | 6 181 | 16 |
| Poland | 53 | 687 | 5 | 52 | 667 | 5 | 49 | 6 223 | 6 | 47 | 5 988 | 7 |
| Czech Republic | 54 | 638 | 9 | 53 | 636 | 9 | 45 | 6 605 | 10 | 43 | 6 583 | 10 |
| Peru | 55 | 602 | 1 | 61 | 386 | -8 | 53 | 5 298 | 36 | 65 | 2 959 | 29 |
| Panama | 56 | 553 | 25 | 54 | 553 | 25 | 54 | 5 206 | 27 | 52 | 5 206 | 27 |
| Iceland | 57 | 551 | 15 | 55 | 551 | 15 | 58 | 4 308 | 19 | 56 | 4 308 | 19 |
| Uzbekistan | 58 | 479 | -1 | 58 | 457 | -1 | 57 | 4 409 | -1 | 58 | 4 171 | -1 |
| Brunei Darussalam | 59 | 473 | -1 | 57 | 473 | -1 | 63 | 3 762 | -2 | 61 | 3 762 | -2 |
| Cyprus | 60 | 428 | -3 | 59 | 428 | -3 | 59 | 4 184 | -1 | 57 | 4 184 | -1 |
| El Salvador | 61 | 417 | 2 | 60 | 417 | 2 | 56 | 4 419 | 4 | 55 | 4 419 | 4 |
| Ukraine | 62 | 405 | 9 | 64 | 352 | 8 | 60 | 4 087 | 7 | 62 | 3 549 | 8 |
| Jamaica | 63 | 369 | -26 | 62 | 369 | -26 | 61 | 3 855 | -24 | 59 | 3 855 | -24 |
| Hungary | 64 | 368 | 7 | 63 | 368 | 7 | 62 | 3 806 | 8 | 60 | 3 806 | 8 |
| Fiji | 65 | 332 | 4 | 65 | 329 | 4 | 72 | 2 403 | -1 | 69 | 2 360 | -1 |
| Trinidad & Tobago | 66 | 328 | 4 | 66 | 328 | 5 | 65 | 3 100 | 3 | 63 | 3 100 | 3 |
| Yemen | 67 | 320 | 13 | 68 | 311 | 14 | 67 | 2 812 | 14 | 66 | 2 716 | 14 |
| Tunisia | 68 | 312 | 4 | 67 | 312 | 4 | 66 | 2 995 | 5 | 64 | 2 995 | 5 |
| Algeria | 69 | 311 | -4 | 70 | 255 | -1 | 64 | 3 101 | -8 | 67 | 2 505 | -6 |
| Lebanon | 70 | 291 | 0 | 69 | 291 | 0 | 75 | 2 168 | -1 | 73 | 2 168 | -1 |
| Cuba | 71 | 263 | 7 | 71 | 247 | 6 | 71 | 2 422 | 8 | 70 | 2 311 | 8 |
| Syrian Arab Republic | 72 | 249 | 14 | 71 | 247 | 14 | 69 | 2 520 | 14 | 68 | 2 500 | 14 |
| Kazakhstan | 73 | 241 | 30 | 78 | 151 | 28 | 70 | 2 470 | 30 | 76 | 1 515 | 27 |
| Venezuela | 74 | 234 | 8 | 93 | 91 | 4 | 68 | 2 579 | 4 | 87 | 985 | -1 |
| Malta | 75 | 218 | 3 | 73 | 218 | 3 | 74 | 2 292 | 0 | 71 | 2 292 | 0 |
| Suriname | 76 | 214 | 6 | 74 | 214 | 6 | 79 | 1 746 | 8 | 75 | 1 745 | 8 |
| Bolivia | 77 | 196 | 5 | 78 | 151 | 4 | 78 | 1 903 | 6 | 77 | 1 434 | 7 |
| Romania | 78 | 188 | 31 | 75 | 181 | 32 | 76 | 1 967 | 28 | 74 | 1 886 | 29 |
| Turkmenistan | 79 | 182 | 0 | 82 | 129 | -2 | 77 | 1 905 | -1 | 78 | 1 337 | -2 |
| Namibia | 80 | 162 | 10 | 76 | 159 | 10 | 90 | 1 012 | 11 | 89 | 982 | 11 |
| Costa Rica | 81 | 156 | 0 | 77 | 154 | -1 | 73 | 2 306 | 6 | 72 | 2 284 | 6 |
| Seychelles | 82 | 145 | 11 | 80 | 144 | 11 | 82 | 1 258 | 11 | 79 | 1 246 | 11 |
| Azerbaijan | 83 | 141 | -6 | 85 | 109 | -10 | 81 | 1 431 | 12 | 82 | 1 107 | 13 |
| Gabon | 84 | 140 | 9 | 81 | 130 | 9 | 99 | 829 | 10 | 97 | 728 | 11 |
| Myanmar | 85 | 132 | 8 | 90 | 100 | 7 | 80 | 1 448 | 8 | 81 | 1 116 | 7 |

1. Most 2005 data are estimates, thus the ranking and the rate of increase or decrease may change when final data become available.
2. For statistical purposes the data for China excludes the traffic for the Hong Kong and Macao Special Administrative Regions (Hong Kong SAR and Macao SAR), and that of the Taiwan province of China.
3. Traffic for the Hong Kong Special Administrative Region (SAR).
4. Traffic for the Macao Special Administrative Region (SAR).
5. Three States — Bahrain, Oman and United Arab Emirates.
6. Three States — Denmark, Norway and Sweden.

a 4.1 percent increase in unit costs by passing part of the cost increase burden to customers through increases in tariffs (yields increased by 4 percent). An important factor in this was the relative low elasticity displayed by the traffic, which showed 4.9 percent growth in spite of a 4 percent increase in yields, and the ability of the airlines to match capacity increases with traffic growth (a 4.6 percent increase in capacity compared with 4.9 percent increase in traffic).

With little difference in the increases of unit costs (4.1 percent) and unit revenues (4 percent) over 2004, the break-even (weight) load factor for all services (scheduled and non-scheduled) operated by scheduled airlines remained at about 62 percent. Similarly, because of the small differential shown in the increases in traffic and capacity between 2004 and 2005, the overall (weight) load factor for the same operations showed little change, remaining at about 62.5 percent.

On a regional basis, in 2005 carriers in North America continued to incur losses. However, through a combination of a stricter control on capacity and controllable costs, and increases in traffic and fares, their operating losses were significantly reduced from $1,870 million in 2004 to $270 million in 2005. These airlines account for some 36 percent of total operating revenues and expenses worldwide, and consequently their results have a significant impact on those shown for the industry as a whole.

In 2005, African carriers incurred operating losses of around $350 million compared to losses of around $240 million in 2004, whereas the airlines of Asia/Pacific, Europe, the Middle East and Latin America collectively achieved an operating profit of approximately $4 billion in 2005, compared to $5.4 billion in 2004. The decrease in profitability for this group of carriers was in part because the airlines of Asia/Pacific, compared to their European counterparts, had a lower level of hedging against changes in fuel prices. At the same time, the increase in their yield failed to keep pace with increases in unit costs.

According to preliminary estimates, the net result for the world's scheduled airlines, derived from the operating result by taking into account non-operating items and taxes, is an estimated loss of $3.2 billion, an improvement over the loss of $5.6 billion in 2004.

Information on both operating and net results over the 1996-2005 period can be found in Table 5.

Available data on non-scheduled carriers are insufficient to produce reliable financial estimates for 2005. In 2004, the operating revenues of non-scheduled carriers are tentatively estimated at $4 billion, much lower than the $6 billion estimated for 2003, mainly because of the realignment of service type by some European operators.

## Table 4. Freight tonne-kilometres performed, 2005 (scheduled services)

| Country and group of countries whose airlines performed more than 25 million freight tonne-kilometres | FREIGHT TONNE-KILOMETRES PERFORMED (millions)[1] | | | |
|---|---|---|---|---|
| | Total operations | | International operations | |
| | Rank in 2005 | Estimate 2005 | Rank in 2005 | Estimate 2005 |
| United States | 1 | 37 358 | 1 | 20 489 |
| Japan | 2 | 8 549 | 2 | 7 755 |
| Germany | 3 | 7 722 | 3 | 7 711 |
| China[2] | 4 | 7 579 | 11 | 4 385 |
| Hong Kong SAR[3] | | 7 764 | | 7 764 |
| Macao SAR[4] | | 170 | | 170 |
| Singapore | 5 | 7 571 | 4 | 7 571 |
| Republic of Korea | 6 | 7 433 | 5 | 7 311 |
| United Kingdom | 7 | 5 998 | 6 | 5 996 |
| France | 8 | 5 802 | 7 | 5 596 |
| Luxembourg | 9 | 5 150 | 8 | 5 150 |
| Gulf States[5] | 10 | 5 036 | 9 | 5 013 |
| Netherlands | 11 | 4 894 | 10 | 4 894 |
| Malaysia | 12 | 2 578 | 12 | 2 527 |
| Australia | 13 | 2 445 | 13 | 2 297 |
| Thailand | 14 | 2 002 | 14 | 1 968 |
| Russian Federation | 15 | 1 541 | 19 | 1 041 |
| Brazil | 16 | 1 531 | 22 | 985 |
| Canada | 17 | 1 527 | 17 | 1 198 |
| Italy | 18 | 1 365 | 15 | 1 360 |
| Israel | 19 | 1 213 | 16 | 1 213 |
| Switzerland | 20 | 1 110 | 18 | 1 109 |
| Colombia | 21 | 1 092 | 20 | 1 015 |
| Chile | 22 | 1 054 | 21 | 1 004 |
| Spain | 23 | 1 022 | 24 | 903 |
| Saudi Arabia | 24 | 1 021 | 23 | 945 |
| South Africa | 25 | 923 | 26 | 857 |
| Qatar | 26 | 870 | 25 | 870 |
| New Zealand | 27 | 781 | 27 | 781 |
| India | 28 | 773 | 30 | 541 |
| Belgium | 29 | 705 | 28 | 705 |
| Scandinavia[6] | 30 | 636 | 29 | 631 |
| Austria | 31 | 537 | 31 | 537 |
| Indonesia | 32 | 440 | 44 | 186 |
| Pakistan | 33 | 408 | 32 | 368 |
| Mexico | 34 | 390 | 35 | 313 |
| Turkey | 35 | 383 | 33 | 367 |
| Finland | 36 | 354 | 34 | 353 |
| Philippines | 37 | 323 | 38 | 256 |
| Sri Lanka | 38 | 310 | 36 | 310 |
| Egypt | 39 | 287 | 37 | 286 |
| Kenya | 40 | 253 | 39 | 253 |
| Kuwait | 41 | 242 | 40 | 242 |
| Portugal | 42 | 235 | 42 | 214 |
| Viet Nam | 43 | 230 | 46 | 174 |
| Jordan | 44 | 224 | 41 | 224 |
| Mauritius | 45 | 212 | 43 | 212 |
| Bangladesh | 46 | 183 | 45 | 183 |
| Peru | 47 | 139 | 49 | 126 |
| Brunei Darussalam | 48 | 134 | 47 | 134 |
| Ethiopia | 49 | 133 | 48 | 133 |
| Argentina | 49 | 133 | 51 | 117 |
| Iceland | 51 | 122 | 50 | 122 |
| Ireland | 52 | 107 | 52 | 107 |
| Iran (Islamic Republic of) | 53 | 98 | 55 | 83 |
| Fiji | 54 | 92 | 53 | 92 |
| Lebanon | 55 | 87 | 54 | 87 |
| Uzbekistan | 56 | 72 | 56 | 71 |
| Poland | 57 | 71 | 57 | 71 |
| Angola | 58 | 68 | 58 | 67 |
| Yemen | 59 | 67 | 59 | 66 |
| Gabon | 60 | 66 | 60 | 65 |
| Greece | 61 | 64 | 63 | 58 |
| Morocco | 62 | 61 | 62 | 60 |
| Namibia | 63 | 60 | 61 | 60 |
| Cyprus | 64 | 48 | 64 | 48 |
| Trinidad & Tobago | 64 | 48 | 64 | 48 |
| Sudan | 66 | 43 | 66 | 39 |
| Ukraine | 67 | 39 | 66 | 39 |
| Czech Republic | 68 | 39 | 66 | 39 |
| Panama | 69 | 37 | 69 | 3 |
| Algeria | 70 | 32 | 70 | 30 |
| Cuba | 71 | 31 | 71 | 29 |
| Uganda | 72 | 29 | 71 | 29 |
| Suriname | 73 | 27 | 73 | 27 |
| Seychelles | 74 | 26 | 74 | 26 |
| Bolivia | 75 | 25 | 78 | 21 |

1. Most 2005 data are estimates, thus the ranking and the rate of increase or decrease may change when final data become available.
2. For statistical purposes the data for China excludes the traffic for the Hong Kong and Macao Special Administrative Regions (Hong Kong SAR and Macao SAR), and that of the Taiwan province of China.
3. Traffic for the Hong Kong Special Administrative Region (SAR).
4. Traffic for the Macao Special Administrative Region (SAR).
5. Three States — Bahrain, Oman and United Arab Emirates.
6. Three States — Denmark, Norway and Sweden.

In 2004 these carriers collectively had an operating profit of about $344 million and a net result of some $390 million after taking into account non-operating items and taxes.

At the end of 2004, the value of all assets of the scheduled airlines from the 189 ICAO Contracting States stood at $473.6 billion, compared to $447.8 billion at the end of 2003. The net value of the airline fleet (after depreciation charges), accounting for about 48 percent of total airline assets, stood at $228 billion at the end of 2004.

*Financial situation of airports*. As traffic recovered, both operating margins and profits of airports continued to improve. Airports Council International (ACI) estimated that capital expenditures by airports in 2005 reached a record high of $36 billion, the highest figure since 1995. This is more than a 16 percent increase compared to the $31 billion spent in 2004, and reflects the urgency of airport expansion planning, given the upward traffic growth trend and the fact some expansion plans had been postponed after 11 September 2001. The methods used for financing these projects have evolved. Where feasible, for example, more emphasis is now being placed on self-generated revenues from commercial activities.

The improved financial situation experienced by major airports over the last two years has renewed the interest of investors, prompting some airports to embark on large-scale development projects, such as terminals, hangars, control towers and other building facilities, to cope with the increasing volume of passengers and cargo. Among the many projects under way:

• at London-Heathrow Airport there is a new Terminal 5 under construction;

• the airports in Moscow have reached a record high level of capital investments;

• Dubai Airport is undergoing a major infrastructure expansion programme (part of this expansion is aimed at the introduction of new larger aeroplanes);

• in the United States — despite airline financial difficulties, high fuel prices, enhanced security measures and other challenges — many major airports are planning for large infrastructure investments; and

• China, in order to cope with the growth in traffic, will spend $17.4 billion to improve existing airports and to build new ones over the next five years.

The rapid expansion of low-cost carriers, mainly in Europe and Asia, has added a whole new dynamic to the airline-airport relationship. Some airports have been quick to adapt their cost-base and pricing structure to the low-cost operations, while an increasing number of airports are discovering that they have to be flexible in order to satisfy the needs of this highly cost-conscious category of users. In addition, new low-cost terminals will be operational next year at Singapore's Changi Airport and Malaysia's Kuala Lumpur International Airport.

After the slow-down experienced since 2001, the process of airport privatization and commercialization regained momentum in 2005, particularly in Asia. For example, the Government of China liberalized its policy regarding airport ownership, allowing greater participation of the private sector in airport investment and management. Following the completion in 2004 of the transfer of ownership and control from the central Government to local provincial governments of some 90 airports across China, this evolution towards diversified ownership of China's airports is accelerating. In India, the process of airport restructuring and development of new ("greenfield") airports is gaining momentum, with two greenfield airports to be commissioned by March 2008 (Bangalore and Hyderabad), and the two gateway airports of New Delhi and Mumbai being assigned to two joint venture companies.

A new trend in 2005, in particular in Europe, is the acquisition of shares in privatized airports by multinational airport companies and consortiums (e.g. Brussels, Copenhagen and Rome airports), and airlines (Frankfurt Airport).

Landing fees and associated airport charges represented approximately 3.9 percent of the total operating expenses of scheduled airlines of ICAO Contracting States in 2004 (2005 data were not available at the time of publication), down 0.1 percent from 2003.

*Air navigation services*. The overall financial situation of air navigation services (ANS) providers continued also to

**Figure 3. Total freight tonnes carried, 1996-2005**

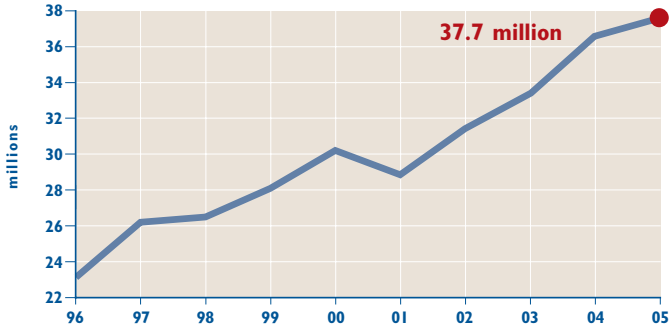
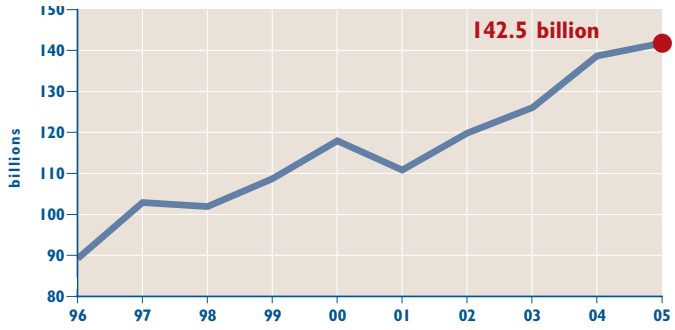



**Figure 4. Total freight tonne-km performed, 1996-2005**



improve in 2005, partly due to the decrease, for the second year in a row, of annual spending on air traffic management (ATM) systems as a consequence of the recent modernization of these systems worldwide.

The recent focus of ANS providers seems to be directed towards international cooperation and commercialization. Cooperation between providers is seen as the way to increase efficiency, enhance airspace infrastructure, generate savings, implement global harmonization standards and improve customer satisfaction. Activities of ANS providers in 2005 have centred on developing closer cooperation among the main industry stakeholders, including customers, employees, airports, civil aviation organizations and technology suppliers. For example, with the "Single European Sky" initiative, Eurocontrol has been drafting various implementation rules, in close coordination with all relevant stakeholders, for the establishment of functional airspace blocks, a single charging scheme, and new extensive interoperability standards, etc.

The commercialization process has often resulted in actions to control or lower operational costs by restructuring the providers' internal organizations, consolidating facilities and increasing productivity. The commercialization of ANS providers is also bringing about investment in new technology and equipment. To date, over 40 States worldwide have commercialized the provision of their air navigation services. Noteworthy developments in 2005 were the German cabinet's approval of a plan to sell 74.9 percent of the shares of the Deutsche Flugsicherung (DFS) and the restructuring of France's Direction Générale de l'Aviation Civile (DGAC) to focus on three core activities: regulatory functions, safety oversight and certification, with the provision of air navigation services now under the responsibility of the Air Navigation Services Department (DSNA).

Charges for air navigation services represented 2.5 percent of total operating expenses of scheduled airlines of ICAO Contracting States in 2004 (2005 data were not available at the time of publication), compared to 2.4 percent in 2003.

**Table 5. Operating and net financial results[1], 1996-2005**
**(scheduled airlines of ICAO Contracting States[2])**

| Year | Operating revenues U.S.$ (millions) | Operating expenses U.S.$ (millions) | Operating result | | Net result[3] | | Income taxes U.S.$ (millions) |
|---|---|---|---|---|---|---|---|
| | | | Amount U.S.$ (millions) | Percentage of operating revenues | Amount U.S.$ (millions) | Percentage of operating revenues | |
| 1996 | 282,500 | 270,200 | 12,300 | 4.4 | 5,300 | 1.9 | -2,500 |
| 1997 | 291,000 | 274,700 | 16,300 | 5.6 | 8,550 | 2.9 | -4,200 |
| 1998 | 295,500 | 279,600 | 15,900 | 5.4 | 8,200 | 2.8 | -4,800 |
| 1999 | 305,500 | 293,200 | 12,300 | 4.0 | 8,500 | 2.8 | -4,300 |
| 2000 | 328,500 | 317,800 | 10,700 | 3.3 | 3,700 | 1.1 | -2,750 |
| 2001 | 307,500 | 319,300 | -11,800 | -3.8 | -13,000 | -4.2 | 3,610 |
| 2002 | 306,000 | 310,900 | -4,900 | -1.6 | -11,300 | -3.7 | 2,300 |
| 2003 | 321,800 | 323,300 | -1,500 | -0.5 | 7,560 | -2.3 | -1,460 |
| 2004 | 378,800 | 375,500 | 3,300 | 0.9 | -5,570 | -1.5 | -2,460 |
| **2005[4]** | **413,300** | **409,000** | **4,300** | **1.0** | **-3,200** | **-0.8** | **n/a** |

1. Revenues and expenses are estimated for non-reporting airlines. 2. Up to and including 1997 operations within the Commonwealth of Independent States are excluded. 3. The net result is derived from the operating result by adding (with plus or minus sign as appropriate) non-operating items (such as interest and direct subsidies) and income tax. The operating and net results quoted, particularly the net results, are the small differences between the estimates of large figures (revenues and expenses) and are therefore susceptible to substantial uncertainties. 4. Preliminary data. The net results for 2005 have been estimated after excluding a provision of U.S. $20.7 billion for reorganization expenses set aside by United Airlines. These expenses will be recorded in the next financial year once the impact of the reorganization costs is known.

TRENDS AND FORECASTS ▮ Total scheduled airline traffic, measured in terms of tonne-kilometres performed, increased at an average annual growth rate of 5.2 percent between 1995 and 2005, with passenger-kilometres growing at about the same average annual rate of 5.2 percent and freight tonne-kilometres increasing at 5.5 percent per annum.

From a regional perspective, the airlines of the North American and European regions accounted for most of the scheduled passenger traffic during the period leading up to 2005, together contributing over 65 percent of total worldwide traffic in 1995, a share that gradually

**Figure 5. Total mail tonne-km performed, 1996-2005**

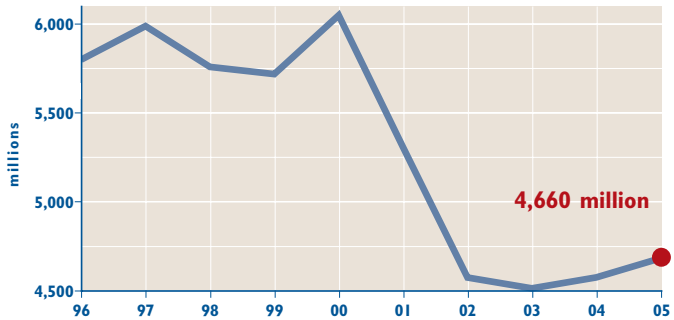
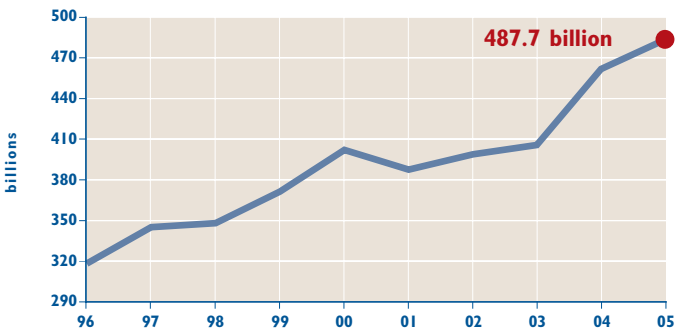



**Figure 6. Total tonne-km performed, 1996-2005**

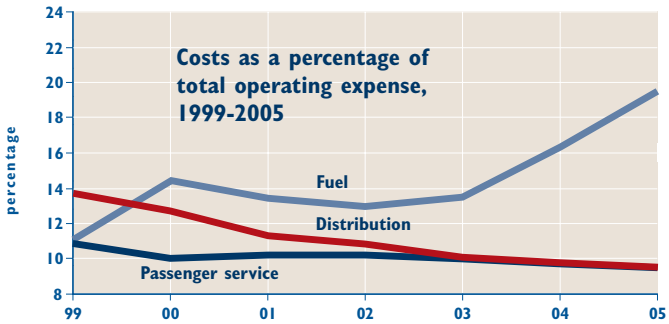


declined to 62.9 percent by 2005. Passenger traffic performed by airlines registered in the Asia/Pacific region, meanwhile, increased from 24.8 percent of the total world traffic to about 26 percent in 2005. The remaining regions collectively contributed 10 percent of traffic in 1995 and 11.1 percent in 2005.

*Passenger traffic forecasts.* Demand for air transport is primarily determined by income and prices. GDP is used as a measure of income while airline yield (unit revenue) is used as a measure of price. Other factors, such as consumer confidence, may also affect demand.

**Table 6. Variance analysis of changes in operating revenues and expenses**

| 2005 versus 2004 | Operating revenues ($ billion) | Operating expenses ($ billion) | Operating result ($ billion) |
|---|---|---|---|
| 2005 | 413.3 | 409.0 | 4.3 |
| 2004 | 378.8 | 375.5 | 3.3 |
| Variance in $ billion | +34.5 | +33.5 | +1.0 |
| Due to change in: | | | |
| Traffic (revenues) and capacity (expenses) | +18.6 | +17.4 | +1.2 |
| Unit revenues and unit costs | +15.2 | +15.6 | -0.4 |
| Differences in exchange rate | +0.7 | +0.5 | +0.2 |




Projections for global and regional economic growth that have been used as a basis for air traffic forecasts over the period to 2008 are presented in *Table 7*, on page 21. These regional and global assessments of the economic outlook take into account the most recent forecasts of the International Monetary Fund (IMF), the Organization for Economic Cooperation and Development (OECD), the World Bank and other organizations in both the government and private sectors. According to these projections, the world economy is expected to grow by 4.9 percent in 2006, 4.7 percent in 2007, and 4.6 percent in 2008.

Among ICAO regions, economic growth in Asia/Pacific is expected to remain solid in 2006, and to maintain momentum through to 2008. Having shown some resilience to geopolitical tensions and conflicts, the Middle East economy is expected to experience a higher than world average growth through to the end of the forecast period. The African economy is projected to grow at 5.7 percent in 2006, 5.5 percent in 2007 and 5.4 percent in 2008. Having shown significant recovery in 2004 and 2005 following stagnation and recession during the 2001-03 period, the economy of the Latin American and Caribbean region is expected to achieve growth rates of 4.3 percent, 4.1 percent and 4 percent in 2006, 2007 and 2008 respectively. It is anticipated that the economy of the North American region will continue to grow at around 3.4 percent in 2006 and 3.3 percent both in 2007 and 2008. A weakness in internal demand, a tight fiscal policy and the appreciation of the euro are anticipated to lead to lower than world average growth rates in the European region, although the economic growth is expected to be higher than the average for the 1995-2005 period.

The reasonably positive economic outlook augurs well for global traffic demand over the forecast period. Global and regional scheduled passenger traffic forecasts for 2006-08, based on economic assumptions and other considerations, are presented in *Table 8* (page 22). Global passenger traffic in terms of passenger-kilometres performed is expected to continue to recover and grow at 6.1 percent in 2006. During 2007 and 2008, passenger traffic is forecast to grow at 5.8 and 5.6 percent, respectively. These forecasts are illustrated in *Figure 13* (page 23), together with traffic growth since 1995.

Traffic growth will vary by geographic region because of the impact of specific local or regional factors. For the period 2006-08, it is anticipated that the traffic of the airlines of the Middle East region will show the highest average annual growth rate of about 10.7 percent (12 percent for 2006, 10.5 percent for 2007 and 9.5 percent for 2008), reflecting good economic performance and aggressive marketing by the airlines. The airlines of the Asia/Pacific region are forecast to experience fairly strong traffic growth rates throughout the forecast period, well above the world average. Traffic of the airlines of Africa and Europe is expected to grow at rates higher than the world average, while the traffic of North America airlines as well as those of Latin America and the Caribbean is expected to grow somewhat below the world annual growth rates during the forecast period.

*Airline financial forecasts.* As financial trends are difficult to forecast, in part because airlines are able to adjust capacity over time and manage yields through fare adjustments at relatively short notice to respond to or create changes in demand, ICAO's financial forecasts are restricted to indicative global trends in financial results.

Based on assumptions for passenger yields and on the passenger forecasts cited in Table 8, together with further

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## ACCURACY COUNTS

**As with any enterprise, it is important for an air carrier to know how many units it produces and how much each production unit costs**

ON the basis of traffic statistics received by ICAO, it would appear that some air carriers do not know how to calculate their available capacity. This is almost like saying that a car manufacturer does not know how many cars it makes.

The measure of production used in the air transport industry is the tonne-kilometre available (TKA). Some argue that the measure of production is the revenue tonne-kilometre performed (TKP), but in fact this indicator represents how much of the available capacity an air carrier was able to sell. Air carriers that do not know how to compute their TKA cannot know the proportion of sales in relation to their volume of production, nor their cost per unit of production, two important measures that managers use to assess the commercial success of an enterprise.

One of the problems may be that the concept of TKAs is poorly understood. The capacity offered is not the maximum design payload of an aircraft. As defined by ICAO and the International Air Trasnsport Association (IATA), the TKA is the capacity available for sale after taking into account any payload limitations due to operational and/or commercial factors.

These days, capacity restrictions required for operational reasons are less common, but they may involve restrictions on an aircraft's maximum take-off weight as a result of the airport's ambient air temperature or high elevation (a typical airport in this category would be Nairobi). Restrictions also arise in operations where range needs to be extended by sacrificing some of the payload for additional fuel.

Commercial reasons may also reduce the capacity available for sale below the maximum design capacity. For example, many of the so-called low-cost carriers only carry passengers and do not make use of the freight carrying capacity of the aircraft. A similar situation may occur with traditional carriers which, in order to maximize their daily aircraft utilization, may forgo the carriage of freight on short routes.

In order to determine an aircraft's overall payload, the operator must convert the number of passengers into a load expressed in kilograms and combine this figure with the weight of freight and mail. The passenger payload is calculated by using an average passenger weight that includes the weight of luggage. In performing this calculation, the air carrier should use the average weight appropriate to its route network. However, should an air carrier not know what figure to apply, ICAO (and IATA) suggest that the calculation be based on a weight of 90 kilograms (198 lb) per passenger (including luggage). To convert seat numbers to a weight figure, the same average passenger weight is applied to the number of seats available.

The air transport industry measures the proportion of capacity sold to

*continued on page 40*

This commentary was prepared by Attilio Costaguta, Chief of the Economic Analyses and Databases (EADS) Section of the Air Transport Bureau at ICAO headquarters, Montreal.

assumptions for the trend in the share of airline revenue from sources other than scheduled passengers, ICAO estimates that total revenues for the world's scheduled airlines will increase substantially in 2006, by approximately 8.2 percent, and slow down slightly to grow by 7.9 percent in 2007 and 7.7 percent in 2008. At the same time, airline expenses are expected to rise at the rate of about 7.7 percent in 2006, 7.5 percent in 2007, and 7.3 percent in 2008.

Although it is not possible to forecast the operating results for 2006-08 with any reasonable degree of certainty, nevertheless the above forecasts of operating revenues and expenses imply that the operating result as a percentage of operating revenues will show an operating profit of about 1.6 percent in 2006. This result is expected to improve progressively to about 1.9 percent in 2007 and 2.2 percent in 2008. These estimates suggest a gradual improvement in the financial outlook for the global airline industry during the forecast period, in line with expectations for traffic growth and general economic development, barring any unforeseen events of significance.

AIR CARRIERS ▮ An estimated 811 air carriers were offering scheduled passenger services on international and/or domestic routings at the end of 2005. According to data published in multilateral airline schedule guides, 737 of these carriers provided scheduled passenger services (this figure includes 74 operators that offered both scheduled passenger and all-freight services), while an additional 91 carriers offered dedicated scheduled all-freight services. The total number of scheduled carriers, at 902, was roughly the same number that were in service at the end of 2004.

*Airline privatization.* To date, about 135 States have announced privatization plans or expressed their intention of privatizing approximately 206 State-owned airlines. Of these carriers, 117 have been privatized at least to some degree. In 2005, among the carriers achieving privatization were Alitalia, FlyLal (Lithuanian Airlines), Kyrgyzstan Airlines and Mexicana. In addition, about 40 State-owned airlines were reported to be in various stages of preparation for partial or full privatization. In several cases, privatization plans were deferred or postponed, although in most of these cases the intention to privatize remains.

*Mergers and acquisitions.* Airlines in many parts of the world continued their pursuit of the advantages perceived in an enhanced market strength through mergers, acquisitions or operational integration. It is estimated that about 72 airlines had shareholdings in foreign operators while 267 airlines had equity owned by foreign investors in various degrees. The major transactions that

occurred in 2005 included a takeover of Swiss by AirTrust (in which Lufthansa has a 49 percent shareholding that will rise to 100 percent by 2007), the integration of SN Brussels Airlines and Virgin Express under common ownership, the acquisition of a 62 percent stake in Slovak Airlines by Austrian Airlines, the merger of America West Airlines and US Airways, the acquisition of an 85 percent stake in Aerorepublica Colombia by Copa Airlines, and an increase of Synergy Group's (Brazil) stake in Avianca from 75 percent to 100 percent.

Air China A330-200

*Alliances*. The year saw the increased presence of airline alliances, especially the three global alliance groupings, i.e. Star Alliance, oneworld and SkyTeam. TAP Portugal, for example, joined Star Alliance, which also accepted the membership application of Swiss. Malev and Royal Jordanian started the formal process of joining oneworld, and Japan Airlines decided to seek membership of the same alliance. Four airlines expressed their interests in joining the SkyTeam associate programme.

The expansion and raised levels of consolidation through alliances continued to attract attention from regulatory authorities. In the United States, the Department of Transportation (DOT) approved and granted antitrust immunity to an alliance agreement between America West Airlines and Royal Jordanian in January and, in October, to a tri-party agreement among American Airlines, LAN Airlines and LAN Peru. The Department of Justice (DOJ) submitted to DOT, in August, a comment against the granting of antitrust immunity to the expanded SkyTeam alliance. In the Pacific region, the Australian Competition and Consumer Commission (ACCC) authorized the continuation of an alliance between Qantas and British Airways for a period of five years.

*Airline business models*. Facing growing cost pressures and an inability to continue to charge higher fares, major airlines have been forced to change their business priorities towards redesigning their business concepts and developing alternative models for their operations in order to increase efficiency and cost effectiveness. One of the models chosen by the major airlines is to set up separate organizations or subsidiaries to handle operations on short-haul routes to be able to compete with low-cost carriers and to avoid the potential threat of new entrants. In 2005, this low-cost "airline within an airline" strategy was adopted by LOT Polish Airlines (Centralwings) and Mexicana (Click Mexicana).

*Product distribution*. Electronic tickets or e-ticketing (i.e. a paperless method for documenting and distributing airline ticket coupons) continued to expand rapidly, including interline e-ticketing, which is the ability to use electronic tickets on flights involving more than one airline. At the end of 2005, about 40 percent of all tickets sold by International Air Transport Association (IATA) member airlines were issued electronically, compared to 25 per-

GOL B737-800

Royal Air Maroc B737-700

cent a year earlier. IATA reaffirmed that the elimination of paper tickets and a 100 percent implementation of e-ticketing worldwide would be achieved by the end of 2007.

Online booking on airlines' own websites attracted an increasing number of consumers during 2005. Low-cost carriers tend to use Internet booking to a much greater extent than major airlines. Ryanair, for example, reported that it sold 98 percent of all seats through its website in 2005. Southwest Airlines obtained approximately 65 percent of its passenger revenues for 2005 through online bookings via its website, compared to 59 percent in 2004.

The major airlines have tried to reduce the distribution costs, especially by saving booking fees related to computer reservation systems or global distribution systems. There is a development of so-called global distribution system new entrants such as Farelogix, G2 SwitchWorks and ITA Software, which provide an alternative to global distribution systems and have the potential to significantly reduce distribution costs for major airlines. For example, Star Alliance concluded "alternative content access platform" contracts with G2 SwitchWorks and ITA Software in an effort to reduce the $2 billion which the member airlines spend annually on global distribution system fees.

*The world fleet.* The world's air carriers ordered 2,140 jet aircraft in 2005, compared with 908 orders placed in 2004. The 2005 order book represented a financial commitment of about $160 billion, a massive increase of $95 billion over the previous year's orders.

Last year aircraft manufacturers delivered 918 jet aircraft, slightly more than the number delivered in 2004 (914). The backlog of unfilled orders at the end of 2005 amounted to 4,494 jet aircraft, compared with 3,258 unfilled orders at the end of 2004.

Among aircraft types, the Boeing 737 family accounted for the largest number of orders in 2005, with 574 new orders placed by airlines. This was followed by 568 orders for the Airbus A320, 235 orders for the future Boeing 787, 206 orders for the Airbus A319, 155 orders for the Boeing 777, and 103 orders for the Airbus A321. (Unlike 2004 and other recent years, regional jet aircraft types were not among the biggest sellers in 2005.) Together these aircraft types accounted for 86 percent of all jet aircraft orders received from airlines last year, as well as 58 percent of the deliveries made and 74 percent of the unfilled orders.

The world's airlines ordered 348 turboprop-powered aircraft in 2005, a substantial increase over the 51 orders placed in 2004 and the 66 orders of 2003. Manufacturers delivered 47 turboprops during the year.

*Fleet composition.* Over a 10-year period ending in 2005, the number of commercial transport aeroplanes in service with a take-off weight of 9,000 kilograms (20,000 lb) or more increased by about 30 percent to 22,133. During this period, the number of jet aircraft rose steadily from 13,784 to 18,246. The number of turboprop aircraft also grew steadily, from 3,092 in 1996 to 4,180 in 2001, when they constituted more than 20 percent of the total commercial fleet. In the years since 2001, however, their numbers have gradually declined to 3,765, a figure that represented 17 percent of the total fleet at the end of 2005.

Compared with 2004, there were 190 more commercial aircraft in service at the end of 2005, an increase of nearly 1 percent.

GENERAL AVIATION ▮ General aviation (GA) aeroplane production enjoyed a banner year in 2005, producing 3,580 units worldwide, 21 percent more than in the previous year. Piston-engine aeroplanes accounted for 70 percent of the total production, while deliveries of business jets rose to 750 from 591 in 2004. These are record levels, with piston-engine production topping annual production numbers for the previous two decades, and production of turbine-powered aircraft exceeding production figures for the past five years. Significantly, the record production yielded billings of $15 billion, a 27 percent increase over 2004 and a substantial improvement over 2003, the worst year for GA aircraft billings since 1998.

General aviation is that segment of civil aviation comprising all non-commercial air transport or aerial work

**Figure 7. Passengers carried, 1996-2005**

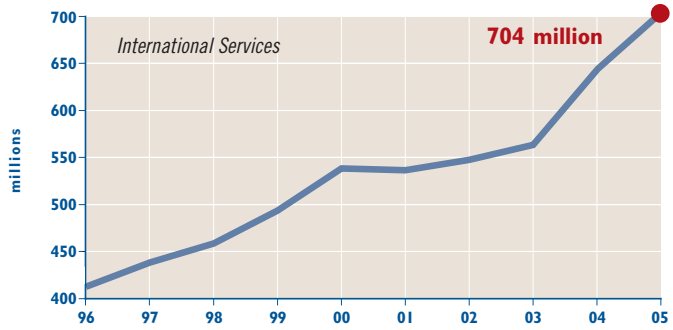
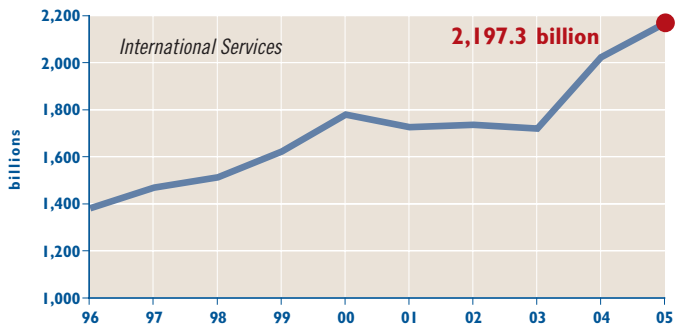



**Figure 8. Passenger-km performed, 1996-2005**



operations. The majority of GA operations are for personal or business transportation, recreation or flight training purposes. While much of the world's GA activity is domestic, greater numbers of more capable aircraft and improved ground infrastructure have fostered increasing amounts of international operations. General aviation also contributes significantly to each State's economy. Although worldwide values are unknown, in 2005 this segment of aviation contributed more than $150 billion to U.S. economic output, and directly or indirectly employed more than 1.2 million people whose collective earnings exceeded $53 billion.

The International Council of Aircraft Owner and Pilot Associations (IAOPA) estimates that there are 385,000 general aviation aeroplanes being operated by an estimated 1.3 million pilots worldwide. The GA fleet flew an estimated 34 million hours in 2005, down approximately 10 percent from 2004. Activity has declined reportedly because of increased costs associated with flight training, fuel, maintenance and regulatory constraints.

Emerging markets in the fast-growing economies of China and India offer great promise for general aviation activities. National economic growth rates of 8 to 12 percent annually, coupled with great distances between in-country and international business centres, make a robust GA community increasingly attractive. As regulatory and infrastructure issues are addressed to accommodate increased general aviation operations, growth rates for these operations should exceed those of their respective national economies.

While difficult to sustain the current worldwide general aviation aeroplane production increases, growth rates on the order of 8 to 10 percent are commonly accepted.

A separate, fast-growing segment of general aviation is that of light aviation aircraft generally defined as single and two-seat ultralight/microlight through light sport aircraft (not including foot-launched types). This category generally has a maximum take-off mass of less than 650 kilograms (1,430 lbs).

The Light Aircraft Manufacturers Association estimates there were 100,000 light aviation aircraft in service globally in 2005, of which approximately 95 percent were aeroplanes. More than 2,000 light aviation aircraft were produced in 2005, and a 15 percent increase in worldwide production is expected for 2006 because of interest in the new light sport aircraft category and acceptance of the category by a growing number of countries.

**Table 7. Economic growth (GDP), 2005-08** (real average annual growth rates)

| Region | Avg. Growth 1995-2005 (%) | Estimated 2005 (%) | Forecast 2006 (%) | Forecast 2007 (%) | Forecast 2008 (%) |
|---|---|---|---|---|---|
| Africa | 3.9 | 5.2 | 5.7 | 5.5 | 5.4 |
| Asia/Pacific | 4.6 | 6.6 | 6.4 | 6.1 | 6.0 |
| Europe | 2.4 | 2.4 | 2.9 | 2.8 | 2.6 |
| Middle East | 4.3 | 5.9 | 5.7 | 5.4 | 5.2 |
| L. America/Caribbean | 2.8 | 4.3 | 4.3 | 4.1 | 4.0 |
| North America | 3.2 | 3.4 | 3.4 | 3.3 | 3.3 |
| World | 3.6 | 4.8 | 4.9 | 4.7 | 4.6 |

*Estimates based on World Bank, IMF and other economic sources*

At the high end of the GA sector, the International Business Aviation Council (IBAC) remains optimistic about future prospects for growth in the business aviation sector over the next 10 years. IBAC cites a market forecast by Honeywell Aerospace that predicts deliveries of 9,900 business jets worth some $156 billion during this period. Rolls Royce foresees production of some 21,000 jet engines valued at about $27 billion during the same period (2005-15).

The worldwide business aircraft fleet exceeded 24,600 turbine-powered aircraft at the end of 2005, with North America accounting for about 72 percent of the world fleet. The largest business aircraft fleet in the world continues to reside in the United States, where 16,827 jet and turboprop business aircraft were based at the end of 2005. Canada was reported to have the second largest fleet, with 814 aircraft registered at year's end. Among the top 10 business aircraft fleets were Mexico (733 aircraft), Brazil (722), Germany (440), France (415), the United Kingdom (346), Venezuela (334), South Africa (306) and Australia (268).

**Figure 9. Freight tonnes carried, 1996-2005**

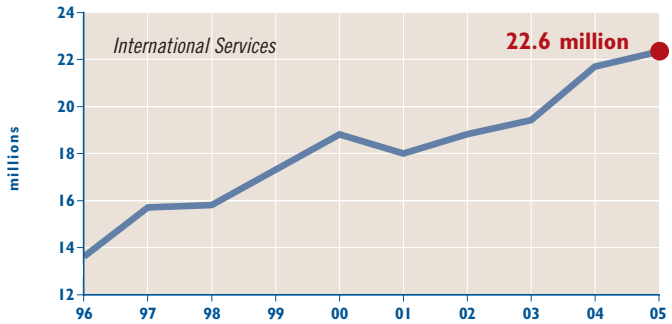
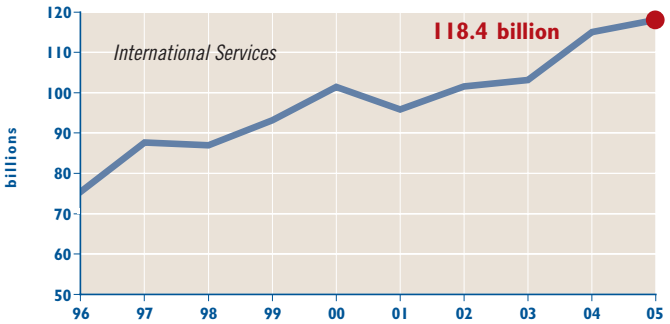



**Figure 10. Freight tonne-km performed, 1996-2005**



SAFETY AND SECURITY ▮ According to preliminary ICAO data, last year there were 18 fatal aircraft accidents and 713 passenger fatalities in scheduled air services worldwide, compared with nine fatal accidents and 203 passenger fatalities in 2004. (ICAO data reflect only accidents that involve passenger fatalities and aircraft having a certificated maximum take-off weight of over 2,250 kg or 5,000 lb.)

The number of passenger fatalities per 100 million passenger-kilometres performed increased to 0.02 from 0.01 in 2004 (see *Figure 14*, page 23) because of the relatively high number of fatal accidents. At the same time, the number of fatal accidents per 100 million aircraft-kilometres flown increased to 0.06 from 0.03 (see *Figure 15*, page 28), and the number of fatal aircraft accidents per 100,000 landings increased to 0.07 from 0.04 in 2004.

**Table 8. Scheduled traffic growth forecast, 2005-08** (passenger-km performed)

| Region | Avg. growth 1995-2005 (%)* | Estimated 2005 (%) | Forecast 2006 (%) | Forecast 2007 (%) | Forecast 2008 (%) |
|---|---|---|---|---|---|
| Africa | 5.4 | 12.1 | 6.9 | 6.3 | 5.7 |
| Asia/Pacific | 5.7 | 7.2 | 7.1 | 6.7 | 6.4 |
| Europe | 5.9 | 9.0 | 6.5 | 6.2 | 6.0 |
| Middle East | 9.7 | 13.6 | 12.0 | 10.5 | 9.5 |
| L. America/Caribbean | 3.9 | 6.4 | 5.0 | 4.7 | 4.2 |
| North America | 4.0 | 7.0 | 4.5 | 4.3 | 4.3 |
| World | 5.2 | 8.0 | 6.1 | 5.8 | 5.6 |

* *average annual growth*

The safety levels are significantly different for the various types of aircraft operated on scheduled passenger services. For instance, in jet aircraft operations, which accounted for over 98 percent of the total volume of scheduled traffic (in terms of passenger-kilometres performed), there were nine accidents in 2005, with 567 passenger fatalities; in turboprop and piston-engined aircraft operations, which accounted for just over 1 percent of the scheduled traffic volume, there were also nine accidents, which resulted in 146 passenger fatalities. Considering the traffic volume involved, the fatality rate for jet aircraft operations was, therefore, far lower than for propeller-driven aircraft.

Data available on the safety of non-scheduled passenger operations in 2005 indicate that there were 18 fatal accidents, the same number as in 2004. Among these fatal accidents were four that involved aircraft operating all-cargo services with passengers on board. The 18 accidents resulted in 278 passenger fatalities, compared with 207 in the previous year. (Non-scheduled commercial operations include both the non-scheduled flights of scheduled airlines as well as all transport flights of non-scheduled operators.)

In non-scheduled operations performed with aircraft of more than 9,000 kilograms (20,000 lb) take-off weight, whether by scheduled airlines or non-scheduled operators, there were 11 fatal accidents and 251 passenger fatalities in 2005. This compares with six accidents and 161 passenger fatalities in the previous year.

*Safety efforts*. As a result of the unusually high number of fatal accidents experienced in mid-2005, ICAO decided to convene a two-day global conference on aviation safety early in 2006. The meeting of the world's civil aviation leaders at ICAO headquarters in March of this year focused on shaping a renewed global strategy for aviation safety (see "Global safety conference heralds new era of openness," Issue 2/2006, pp 5-7).

With a renewed focus on safety enhancement, ICAO last year initiated its Unified Strategy Programme (USP). The goal of this programme, based on principles of increased transparency and cooperation between stakeholders, is to resolve safety-related deficiencies by ensuring that remedies are implemented. USP is currently developing a Flight Safety Information Exchange (FSIX) service, a web-based tool (www.icao.int/anb/fsix) that will serve as a forum to access operational and safety-related information, including links to safety oversight audit reports. (The programme is managed by the newly created USP Unit which resulted from a restructuring of

**Figure 11. Mail tonne-km performed, 1996-2005**

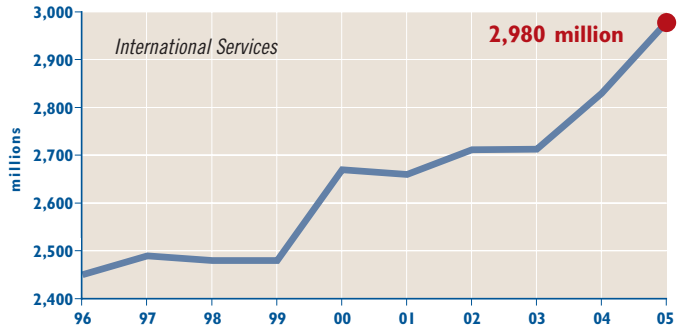
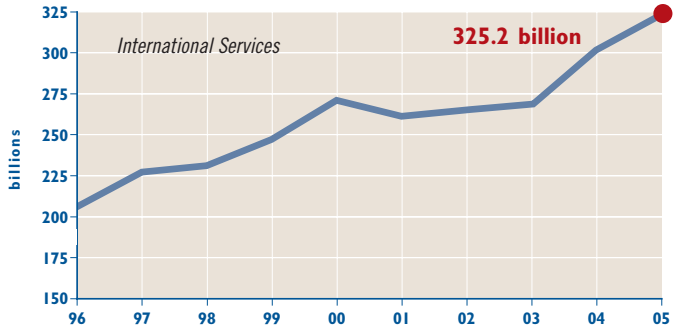



**Figure 12. Total tonne-km performed, 1996-2005**



the Secretariat that also merged two of the 10 sections within the Air Navigation Bureau. The change reflects a shift in priorities, with new emphasis on a more active approach to the implementation of ICAO standards as opposed to their development, and a new focus on the safety management process and the creation of safety management systems among the world's civil aviation administrations and the industry at large.)

Efforts for providing assistance to States through partnerships and the formation of regional safety oversight organizations are under way. The USP is also developing procedures with respect to financial assistance that may be needed to implement sustainable solutions to safety-related deficiencies.

The dilemma of insufficient funds may be addressed in many cases by the International Financial Facility for Aviation Safety (IFFAS), set up with voluntary contributions to finance safety-related projects for which States cannot otherwise obtain the necessary financial resources. IFFAS commenced implementation of its funding mechanism in 2004, and since its establishment has funded seven safety-related projects in various regions. With limited resources, priority is being given to projects proposed by least developed countries. In its first published annual report released in 2005, IFFAS indicated it had received a total of approximately $2.8 million in contributions, and by early 2006 a total of 53 Contracting States plus two other parties had made donations.

A new phase of the ICAO Universal Safety Oversight Audit Programme (USOAP) came into effect at the beginning of 2005. The comprehensive systems approach for safety oversight audits was introduced with the goal of completing a six-year audit cycle involving 189 Contracting States by the end of 2010.

Initial audits conducted under the greatly expanded programme allowed ICAO to review and fine-tune the audit process and a series of tools. One of the changes associated with the comprehensive programme is the restructuring of the audit reports themselves, which now reflect the critical elements of a safety oversight system. Distribution of the final reports has also been changed and now relies on a dedicated, secure website which includes information derived from the Audit Findings and Differences Database. The final audit reports are now made available in their entirety to all Contracting States; to promote transparency still further, summary reports and in some cases full reports will be made accessible at ICAO's public website.

In preparing for the launch of safety oversight audits under the comprehensive systems approach, ICAO conducted a seminar and workshop at each of its seven regional offices, with the participation of more than 400 experts. The organization also conducted six auditor training courses during 2005.

A four-day seminar on regional cooperation for safety oversight was held in Cairo, Egypt in September. An element of ICAO's unified strategy to resolve safety-related deficiencies, the event provided a forum for operational staff of existing and emerging regional entities from around the world to share their experiences and exchange safety oversight-related information and materials. The seminar represented the beginning of a series of efforts taken by ICAO to raise the level of commitment among States for their safety oversight obligations.

In an effort to promote runway safety, ICAO last year produced a CD-ROM together with Embry-Riddle Aeronautical University. The interactive toolkit includes references to relevant ICAO standards, recommended practices and procedures, along with guidance and documentation on runway safety programmes, educational videos and posters. Links are also provided to several websites that contain comprehensive runway safety programmes initiated by several States and international organizations.

In addition to the toolkit and seminars on runway safety and air traffic services (ATS) management, a runway incursion prevention manual is under development with the assistance of several States and organizations. The ICAO runway safety awareness campaign was inspired by a rising number of runway incursions at air-

**Figure 13. World scheduled passenger traffic trend, 1995-2008**
(passenger-km performed)

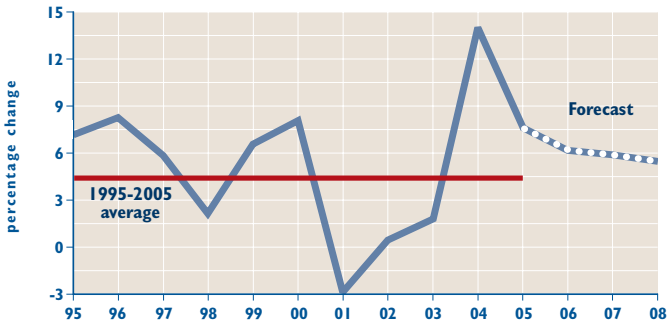
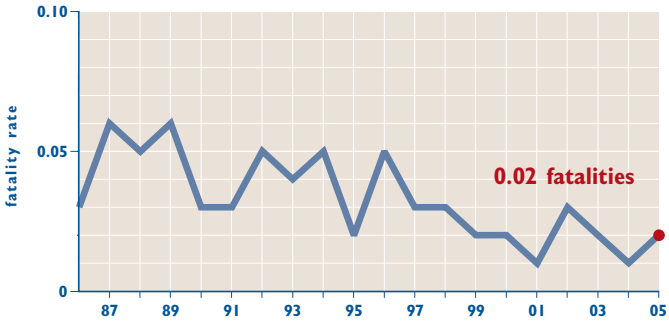



**Figure 14. Passenger fatalities per 100 million passenger-km, 1986-2005** (scheduled services)



ABSA Cargo B767-300


Jazeera Airways A320

ANA B777-300ER

US Airways A330-300

ports around the world, and the realization that their occurrence is partly related to the ineffective implementation of existing ICAO provisions.

In the human factors area, ICAO held a global symposium on threat and error management and the process for conducting a normal operations safety survey (NOSS) in air traffic control in Luxembourg in November. The symposium was designed to assist States and air traffic services (ATS) providers in their efforts to monitor safety during normal ATS operations as part of a safety management system.

ICAO also launched a website dedicated to flight safety and human factors. The new site (www.icao.int/anb/humanfactors/) offers information about the ICAO Flight Safety and Human Factors Programme, including its various projects, publications, resources and working group activities, as well as links to other relevant websites.

The organization began work on an amendment to ICAO Annex 6 that would require the carriage of a certified true copy of the air operator certificate (AOC) as well as the authorizations, conditions and limitations issued to the operator by the State of the operator in conjunction with the AOC. (The work was completed this year, with the adopted amendment to become applicable in November 2006.) The documentation is required during international air transport operations, thus making it easier for Contracting States to identify the State responsible for regulatory oversight of the aircraft. The amendment includes a provision requiring Contracting States to recognize as valid an operator certificate issued by another Contracting State, provided the requirements under which the certificate was issued are at least equal to the applicable standards specified in the annex.

In addition, work was completed last year on a draft safety management manual (now in print and available at the ICAO website). The manual provides States with guidance in implementing standards and recommended practices (SARPs) for safety management.

ICAO also surveyed member States about the existence of national laws and regulations that serve to protect information acquired from safety data collection and processing systems in order to improve safety. The review of the information was required to develop legal guidance for States that desire to enact protective legislation while also allowing for the proper administration of justice.

Among other efforts in 2005 that served to enhance safety were:

• development of performance-based standards for helicopter operations, which are expected to increase compliance with ICAO SARPs as well as provide States with a more flexible approach to safety regulations;

• improvement of the quality of search and rescue (SAR) services in participating States of the Africa-Indian Ocean

region, with funds provided by the Government of France (see "ICAO study highlights current state of SAR services in much of Africa", Issue 8/2004);

• preparation for the International Telecommunication Union (ITU) World Radiocommunication Conference in 2007, including adoption of an ICAO position for the forthcoming conference, with the goal of protecting the radio frequency spectrum allocated to aeronautical safety services;

• updating of medical provisions contained in ICAO Annex 1, aligning them with established aeromedical practice in many developed aviation countries;

• ongoing work on the ICAO action plan for the introduction of new larger aeroplanes; and

• completion of a safety oversight audit of the newly created European Aviation Safety Agency, which recently assumed responsibility for regulatory competencies in the fields of airworthiness, continuing airworthiness and environmental certification for member States of the European Union.

*Aviation security.* During 2005, six acts of unlawful interference were recorded (see *Figure 16*, page 28) in which three persons were killed and another 60 were injured. Among these events were two unlawful seizures and two attacks on facilities.

An important amendment to ICAO Annex 17 was adopted by the ICAO Council in November and became applicable in 2006. The document contains provisions, including standards and recommended practices, for aviation security.

The latest amendment is intended to ensure that the measures in ICAO Annex 17 are commensurate with the level of threat faced by civil aviation. Proposed by the Aviation Security Panel following meetings held in 2004 and 2005, the revisions are based on a review of Annex 17 provisions that focused on clarifying the wording of existing SARPs. The changes are expected to facilitate the common interpretation of SARPs by Contracting States as well as the ease of auditing compliance with SARPs under ICAO's security audit programme.

ICAO also continued to encourage member States to provide funding for the implementation of the ICAO aviation security plan of action, and proposed that States pledge financial contributions on a systematic basis in order to ensure the proper planning and execution of security-related programmes over the remainder of the 2005-07 triennium (ICAO activities are planned on a three-year basis).

While the aviation security plan of action currently depends on voluntary contributions, ICAO continues to explore ways to progressively integrate the activities into its regular programme budget. In the meantime, regular financial contributions remain vital, as do contributions in-kind by States, in particular through the secondment of auditors to the Universal Security Audit Programme (USAP) as well as course instructors and assistance for States in need of security expertise.

Audits of aviation security systems worldwide continue to be conducted under USAP, which was established in 2002. The audit programme aims to identify deficiencies in aviation security systems and to provide States with recommendations for resolving them.

Aviation security auditors are trained and certified by ICAO in accordance with a standardized and transparent audit methodology. During 2005, USAP auditor training and certification courses were conducted in Buenos Aires, Kuala Lumpur and Oklahoma City, bringing the total number of certified auditors to 156, a roster representing 69 States as well as all ICAO regions.

During 2005, ICAO aviation security audit teams completed 61 audits of States and their primary international airports, bringing the total number of such audits to 105, thus passing the half-way mark for the initial audit cycle involving 189 Contracting States.

During the year, States were provided with feedback on the adequacy of their corrective action plans for rectifying deficiencies identified through security audits. Follow-up audits were initiated to evaluate the degree of progress made by States in implementing the ICAO audit recommendations. These visits are scheduled two years after

Aer Lingus A320

Air Asia A320

the initial audit and are normally conducted by security officers posted in ICAO regional offices.

In November, ICAO Council approved a new strategy known as the coordinated aviation security assistance and development programme. The strategy was initiated to further enhance assistance to States so that they can effectively develop their aviation security infrastructure as well as improve existing infrastructure and correct deficiencies disclosed by USAP audits. The strategy calls for closer cooperation among States, regional and international bodies, and multinational funding institutions.

*Facilitation*. The new edition of Annex 9 that came into effect in July 2005 contains a number of provisions that aim to enhance the security of travel documents. For one, Contracting States are required to regularly update security features in new versions of their travel documents, guard against their misuse, and facilitate detection of cases where such documents have been unlawfully altered, replicated or issued. States are also obliged to establish controls on the unlawful creation and issuance of travel documents in order to safeguard against the theft of their stocks and misappropriation of newly issued travel documents. The updated Annex 9 also recommends that States incorporate biometric data in machine readable passports, visas and other official documents.

The latest edition of Annex 9 also includes far-reaching standards and recommended practices related to travel document fraud and illegal immigration, international health issues and regulations, and assistance to aircraft accident victims and their families.

In August, ICAO disseminated guidelines on passenger name record (PNR) data to member States to assist with implementing an Annex 9 recommendation on PNR data handling. The guidelines set uniform measures for the transfer and subsequent handling of such data by States. They also address the necessity of incorporating PNR data policy into national laws and regulations.

ICAO has set up a special project to assist States with the mandatory conversion to machine readable passports. The deadline for States to issue solely machine readable passports is 1 April 2010. Assistance from ICAO is available for project planning, education and training, arrangements for financing, procurement assistance, start-up project management and/or system evaluation services.

ICAO continued the development of technical specifications for e-passports, to be published in 2006. ICAO was also working to set up a central public key directory (PKD) to facilitate the authentification of e-passports, a service that would be available to States and airlines.

*Air law developments*. The results of a survey of member States that were analysed in 2005 indicated that there is a need to amend the existing international air law instruments or alternatively to adopt a new instrument to cover the new and emerging threats to civil aviation.

Of those responding to the questionnaire by early November, more than 92 percent indicated they would support the creation of a new international legal instrument, either in the form of an amendment or a separate convention, to address the new and emerging threats. Based on the results of the study, ICAO decided to form a Secretariat study group to focus on the issue.

Among the new and emerging threats that have been identified by ICAO are the misuse of aircraft as weapons; suicide attacks in the air and on the ground; electronic attacks using radio transmitters or other means to jam or interfere with ground or airborne navigation or guidance control systems; computer-based attacks which block or alter aeronautical communications; chemical and biological attacks against passengers; misuse of nuclear or other radioactive materials; and attacks on aircraft using a man-portable air defence system (MANPADS).

In light of the threat posed by MANPADS, ICAO participated last year in the UN working group concerned with tracing illicit small arms and light weapons. In June the working group recommended that the UN adopt an international instrument that covers portable launchers of anti-aircraft missile systems.

ICAO also continued its work last year on the modernization of the Rome Convention of 1952. A special group established by the ICAO Council held two meetings to

Air New Zealand B777-200ER


Frontier Airlines A318

consider a draft convention or conventions that will address third-party damage caused by aircraft. The group paid particular attention to the possibility of establishing a mechanism to pay compensation to victims above the amounts which airlines may be able to provide through insurance, in the case where the damage is caused as a result of an act of unlawful interference. A new convention is considered necessary to reflect recent trends and developments in international liability law.

ENVIRONMENTAL PROTECTION ▮ During 2005 the ICAO Committee on Aviation Environmental Protection (CAEP), which is composed of experts nominated by ICAO member States and major sectors of the aviation industry, continued studying possible ways to limit or reduce the impact of aircraft noise and engine emissions on the environment. The CAEP Steering Group met in Montreal in October to review progress with the work programme for promoting environmental protection.

A framework to address the interdependencies of environmental measures is under development and will provide a more solid basis for future decisions on appropriate measures for minimizing aviation's impact on the environment. CAEP is also exploring how various tools might be used to evaluate the evolution of the impact of aircraft noise as well as local and global emissions related to aviation. Results of these assessments are expected by the next CAEP meeting in February 2007.

*Aircraft engine emissions.* During the year ICAO adopted new standards for emissions of nitrogen oxides ($NO_X$) that are 12 percent more stringent than the previous emission levels agreed to in 1999. The more stringent standards become applicable in 2008. The organization also continued to study options to further limit or reduce emissions from aviation. Focus was placed on technical, operational and market-based options, and on cooperation with relevant UN organizations active in the field of climate change, particularly the UN Framework Convention on Climate Change (UNFCCC).

ICAO is considering to what extent technology can help reduce the impact of engine emissions through improved engine or airframe design. The emissions considered include those already regulated by ICAO standards and others, such as particulates, which could be relevant to the production of condensation trails and cirrus cloud formation.

The organization also continued to promote its guidance material for States on best aircraft operating practices, and to identify new potential action for minimizing greenhouse gas emissions. At the same time, CAEP is developing practical tools for evaluating the environmental benefits of CNS/ATM system enhancements at the State level.

ICAO continued examining the scientific, economic and legal aspects of local air quality and greenhouse gas emissions charges. In light of recent legal findings, it was decided that CAEP would concentrate its efforts on developing guidance material on emissions charges related to local air quality, focusing in this instance on $NO_X$. In relation to greenhouse gases, the committee continued to conduct studies and develop guidance for including international aviation in an open emissions trading scheme.

*Land-use planning.* During 2005 ICAO surveyed member States on land-use planning measures related to airports, at the same time urging States to promote appropriate land-use planning practices around airports. The questionnaire requested information on current State policy on land-use planning and management related to lands adjacent to airports, as well as best practices and unsuccessful practices.

CAEP continues to update guidance material contained in the *Airport Planning Manual* (Document 9184), specifically Part 2, *Land Use and Environmental Control*, which contains a description of current practices in certain countries. As well as land-use planning guidance, the document examines environmental management and control in terms of airport development and operations.

CAEP was also in the process of updating a circular on the recommended method for computing noise contours around airports. At year-end, Circular 205 was being revised in order to offer States the best possible information on aircraft noise modelling.

Mexicana A318

Etihad Airways B777-300

*Aircraft noise.* During August 2005 ICAO held its second aircraft noise certification workshop, a forum for discussions with civil aviation administration experts responsible for noise certification as well as manufacturers. Work also continued on monitoring new technology related to the reduction of sonic boom, the development of criteria for certification of future supersonic aircraft, and on the analysis of the correlation between noise certification levels and operational noise levels.

Airbus S.A.S.

**During 2005 ICAO adopted new standards for emissions of nitrogen oxides. The more stringent standards for aircraft engine emissions become applicable in 2008.**

A noise certification database was developed and will be made available at the ICAO website. The user friendly database allows direct consultation on the noise levels of specific aircraft types. A similar database on aircraft engine emissions is available at the ICAO website. Work also continued last year on updating *Guidance on the Balanced Approach to Aircraft Noise Management* (Document 9829) and associated documents.

International Civil Aviation Day, celebrated annually since 1994 to mark the creation of ICAO on 7 December 1944, focused in 2005 on an environmental theme. In a call for the "greening of aviation," ICAO highlighted efforts to maximize civil aviation's compatibility with the quality of the environment.

ECONOMIC REGULATION ▮ Bilateral air services agreements are still the prevailing approach used by States in expanding international air transport services. During 2005, a total of 86 bilateral air services agreements were reportedly concluded or amended by 75 States. Continuing a trend, over 70 percent of these agreements and amendments contained some form of liberalized regulatory arrangements.

One notable development is the considerable increase in the number of "open skies" bilateral air services agreements, which provide for full market access without restrictions on designations, route rights, capacity, frequencies, codesharing and tariffs. By December 2005, 118 open skies agreements had been concluded among 85 States, including 16 agreements among 19 States in 2005. About 65 percent of the agreements involved developing countries.

*Regional regulatory developments.* Some agreements negotiated in recent years have sought to liberalize air transport services on a regional or sub-regional basis or amongst a group of like-minded States. To date, there have been at least 11 such regional or plurilateral arrangements, with several other potential arrangements in the pipeline. Among noteworthy regional regulatory developments in 2005 were the following events:

• Peru withdrew, in January, from the Multilateral Agreement on the Liberalization of International Air Transportation (MALIAT) known as the Kona "open skies" agreement;

**Figure 15. Fatal accidents per 100 million aircraft-km flown, 1986-2005** (scheduled services)

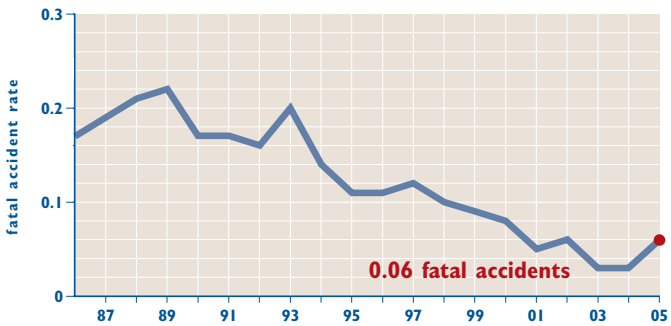
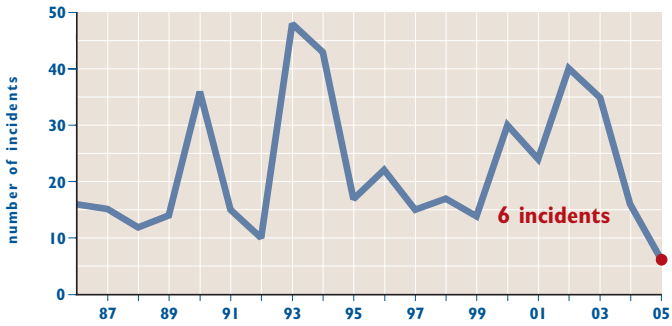



**Figure 16. Number of acts of unlawful interference, 1986-2005**




Air Algerie B737-800


Czech Airlines A320

• the African ministers responsible for air transport adopted, in May, a plan of action to expedite and monitor the implementation of the Yamoussoukro Decision of 1999, which liberalizes intra-African air services;
• 10 member States of the Association of South-East Asian Nations (ASEAN) adopted, in September, a roadmap to liberalize air cargo services in 2008 and passenger services in 2010, as well as to build a common ASEAN aviation market in 2015.

The European Commission conducted negotiations on air services agreements with third countries. The Commission's negotiating mandate conferred by the Council of the European Union (EU) is to negotiate, on behalf of all member States, an Open Aviation Area (OAA) agreement with the United States, a Euro-Mediterranean aviation agreement with Morocco, and a European Common Aviation Area (ECAA) agreement with the countries of the Western Balkans. A first-step OAA agreement with the United States was tentatively agreed upon in November, and the latter two agreements were initialled in December. The Commission also conferred a so-called "horizontal" mandate to negotiate with third countries on the replacement of certain specific provisions in the existing agreements declared contrary to Community law by a judgement of the Court of Justice of the European Communities in November 2002. "Horizontal" agreements have been initialled by 20 States, and two of them were formally signed (with Chile in October and Ukraine in December). In addition, the Commission asked the Council to grant negotiating mandates for OAAs with China and the Russian Federation and other important third countries, such as Australia, Chile, India and New Zealand.

*Trade in services.* The Council for Trade in Services of the World Trade Organization (WTO-OMC) formally commenced the second review of the Annex on Air Transport Services of the General Agreement on Trade in Services (GATS). Paragraph 5 of the annex requires that the review be conducted at least every five years. The first review, which started in 2000 and ended in 2003, resulted in the annex remaining unchanged and continuing to cover the three so-called "soft" rights, namely: aircraft repair and maintenance, selling and marketing of air transport, and computer reservation system (CRS) services.

*National policies.* Several States moved to liberalize domestic air transport markets and relax restrictions on international air services on a unilateral basis. For example, following the initial designation of six airlines last year, the Government of Nigeria designated two more airlines to operate intra- and intercontinental services. In June, the Government of Tunisia announced an "open skies" policy for international passenger and cargo services to/from Tabarka and Tozeur-Nafta airports. In August, the Government of Venezuela introduced a fare-band system, which allows airlines to set certain domestic air fares within the prescribed zones at their own discretion. In September, the Government of the United Kingdom announced the liberalization of foreign airlines' fifth freedom air services to/from regional airports. In October, the Government of Pakistan announced an "open skies" policy for international passenger and cargo services to/from Gwadar Airport.

The rapid growth of low-cost carriers has induced mixed regulatory reactions. In March, the Government of Indonesia announced that it would limit foreign low-cost carriers' landing rights at four major airports. In August, the Government of China adopted more flexible regulatory measures in treating service provisions and pricing for newly-established domestic low-cost carriers. In September, the European Commission adopted guidelines on financing of airports and start-up aid to airlines, especially low-cost carriers, departing from regional airports. The guidelines reflect the Commission's decision of February 2004 on the establishment of Ryanair at Charleroi.

*State aid.* Many States continued to provide varying forms of State aid to their national airlines facing financial difficulties. For example, the Government of Jamaica committed itself to a maximum subsidy of $30 million per year for Air Jamaica. In May the European Commission

authorized a rescue aid of about 100 million euros for Cyprus Airways by the Government of Cyprus. In some States, bankruptcy codes may also act as an indirect form of State assistance for bankrupted airlines, such as for United Airlines (bankruptcy protection from December 2002), Hawaiian Airlines (from March 2003 to June 2005), US Airways (from September 2004 to September 2005), Varig (from June 2005), Delta Air Lines (from September 2005) and Northwest Airlines (from September 2005).

Bombardier Aerospace

Diamond Aircraft

**General aviation aeroplane manufacturers enjoyed a banner year in 2005, with production of 3,580 units worldwide**

*Consumer protection.* While contract terms and conditions for transporting passengers have traditionally been developed by airlines, a number of States have adopted some regulatory measures that address consumer interest issues. In Europe, the Council Regulation 261/2004 entered into force in February, establishing common rules on compensation and assistance to passengers when faced with denied boarding, cancellation of their flight or a long delay. The Advocate-General of the Court of Justice of the European Communities issued the opinion in September, dismissing a legal action brought forward by IATA and others regarding the Regulation 261/2004. In the United States, the DOT has been in the process of revising its rule concerning non-discrimination on the basis of disability in air travel, which would extend the application of the Air Carrier Access Act, in this issue, to foreign airlines.

*Taxation.* The idea of innovative financing for development aid is now an issue on the agenda of all major international forums. Although this principle has gained broad support by the international community, the means of contribution has been contested by a number of States and industry groupings. In January, the President of France made a statement which called for greater efforts to solve a number of the world's problems and proposed the introduction of a contribution levied on air tickets to raise funds for development aid such as the fight against HIV/AIDS, tuberculosis and malaria in Africa. France took the lead in implementing this proposal by imposing a levy on all commercial airline tickets (which came into force in July 2006) and that ranges in price from one to 40 euros depending on the distance travelled and the type of service. Thirteen other States announced similar taxation plans. During its discussion of the matter, the ICAO Council agreed that the objective of the contribution was a noble one, and it decided to continue monitoring developments.

TECHNICAL COOPERATION ▮ The ICAO Technical Cooperation Programme for 2005, including portions of projects implemented by governments, was valued at $146 million, compared with $155.8 million in 2004. By year's end, $115.9 million — 79 percent of the funds available — had been implemented.

ICAO carried out 277 projects in 105 countries last year; in addition, a total of 10 large-scale projects and revisions to large-scale projects (i.e. those valued at over $500,000) received approval. New projects were initiated last year in Egypt, Guatemala, India, Lao People's Democratic Republic, Singapore, Timor-Leste and the United Republic of Tanzania.

With limited funds available for technical cooperation in general, the civil aviation sector faces intense competition in securing a portion of this financial support, a situation that becomes even more critical when recipient countries shift priorities away from civil aviation to programmes they consider more essential. Moreover, United Nations resolutions have stressed that national development plans and priorities should be formulated as a total package in developing a country strategy, a more centralized approach that marginalizes and penalizes smaller institutions within the ministerial structure, and places agencies such as ICAO at a disadvantage because they have no representation at the country level.

*Personnel and equipment procurement.* ICAO's Technical Cooperation Bureau employed 463 experts from 44 countries

*continued on page 41*

# Status of Certain International Air Law Instruments

*Since it was adopted at the Chicago Conference of 1944, the Convention on International Civil Aviation (also known as the Chicago Convention) has been accepted by 189 countries throughout the world. The international community has also adopted a number of other legal instruments relevant to the work of ICAO. This four-page section reviews the status, as at 30 June 2006, of the Chicago Acts (i.e. the Chicago Convention, amendments and related agreements) and other relevant international air law instruments.*

*The first part of the status report indicates the total number of parties that have ratified or otherwise accepted each international air law instrument and, if applicable, the date the legal instrument entered into force. The table on the following pages indicates the current status of the instruments on a country-by-country basis.*

**Chicago Convention** (1944)
*Constitution of ICAO*
**189 parties**; In force: 4.4.47

**Article 93 bis** (1947)
*Expulsion or suspension*
**110 ratifications**; In force: 20.3.61

**Article 45** (1954)
*Seat of Organization*
**137 ratifications**; In force: 16.5.58

**Articles 48(a), 49(e)** and **61** (1954)
*Frequency of Assembly sessions and budgets*
**140 ratifications**; In force: 12.12.56

**Article 48(a)** (1962)
*Extraordinary Assembly at request of one-fifth of Contracting States*
**113 ratifications**; In force: 11.9.75

**Article 50(a)**
*Increase of Council to:*
• *27 members (1961)*
**131 ratifications**; In force: 17.7.62
• *30 members (1971)*
**127 ratifications**; In force: 16.1.73
• *33 members (1974)*
**125 ratifications**; In force: 15.2.80
• *36 members (1990)*
**130 ratifications**; In force: 28.11.02

**Article 56**
*Increase of ANC to:*
• *15 members (1971)*
**132 ratifications**; In force: 19.12.74
• *19 members (1989)*
**117 ratifications**; In force: 18.4.05

**Final Paragraph** (1977)
*Referring to authentic Russian text*
**116 ratifications**; In force: 17.8.99

**Article 83 bis** (1980)
*Lease, charter or interchange*
**148 ratifications**; In force: 20.6.97

**Article 3 bis** (1984)
*Non-use of weapons against civil aircraft in flight*
**135 ratifications**; In force: 1.10.98

**Final Paragraph** (1995)
*Referring to the authentic Arabic text*
**56 ratifications**; Not in force: 122 ratifications required

**Final Paragraph** (1998)
*Referring to the authentic Chinese text*
**41 ratifications**; Not in force: 124 ratifications required

**Protocol on authentic trilingual text** (1968)
**149 parties**; In force: 24.10.68

**Protocol on authentic quadrilingual text** (1977)
**82 parties**; In force: 16.9.99

**Protocol on authentic quinquelingual text** (1995)
**70 parties**; Not in force: pending entry into force of final clause

**Protocol on authentic six-language text** (1998)
**50 parties**; Not in force: pending entry into force of final clause

**International Air Services Transit Agreement** (1944)
*Two freedoms of the air*
**123 parties**; In force: 30.1.45

**International Air Transport Agreement** (1944)
*Five freedoms of the air*
**11 parties**; In force: 8.2.45

**Warsaw Convention** (1929)
*Rules for international carriage by air*
**151 parties**; In force: 13.2.33

**Geneva Convention** (1948)
*Recognition of rights in aircraft*
**87 parties**; In force: 17.9.53

**Rome Convention** (1952)
*Damage to third parties on surface*
**47 parties**; In force: 4.2.58

**The Hague Protocol** (1955)
*Amending Warsaw Convention of 1929*
**136 parties**; In force: 1.8.63

**Guadalajara Convention** (1961)
*Supplementing Warsaw Convention of 1929*
**84 parties**; In force: 1.5.64

**Tokyo Convention** (1963)
*Offences and other acts committed on board aircraft*
**182 parties**; In force: 4.12.69

**The Hague Convention** (1970)
*Unlawful seizure of aircraft*
**182 parties**; In force: 14.10.71

**Guatemala City Protocol** (1971)
*Amending Warsaw Convention of 1929 as amended by The Hague Protocol of 1955*
**7 ratifications***; Not in force: 30 ratifications by signatory States required, subject to certain conditions

**Montreal Convention** (1971)
*Unlawful acts against the safety of civil aviation*
**185 parties**; In force: 26.1.73

**Additional Protocol No. 1** (1975)
*Amending Warsaw Convention of 1929*
**48 parties**; In force: 15.2.96

**Additional Protocol No. 2** (1975)
*Amending Warsaw Convention of 1929 as amended by The Hague Protocol of 1955*
**49 parties**; In force: 15.2.96

**Additional Protocol No. 3** (1975)
*Amending Warsaw Convention of 1929 as amended by The Hague Protocol of 1955 and Guatemala City Protocol of 1971*
**21 ratifications**; Not in force: 30 ratifications by signatory States required

**Montreal Protocol No. 4** (1975)
*Amending Warsaw Convention of 1929 as amended by The Hague Protocol of 1955*
**53 parties**; In force: 14.6.98

**Montreal Protocol** (1978)
*Amending Rome Convention of 1952*
**9 parties**; In force: 25.7.02

**Montreal Supplementary Protocol** (1988)
*Acts of violence at airports*
**159 parties**; In force: 6.8.89

**Convention on the Marking of Plastic Explosives for the Purpose of Detection** (1991)
**127 parties**; In force: 21.6.98

**Montreal Convention** (1999)
*Rules for international carriage by air*
**72 parties**; In force: 4.11.03

**Cape Town Convention** (2001)
*International Interests in Mobile Equipment*
**10 parties**; In force: 1.3.06 as applied to aircraft

**Cape Town Aircraft Protocol** (2001)
*Protocol to the Cape Town Convention on Matters specific to Aircraft Equipment*
**10 parties**; In force: 1.3.06

**Notes**

1. The Government of the United States is the depositary of the Chicago Convention, the International Air Services Transit Agreement, the International Air Transport Agreement and the Protocols relating to the Authentic Trilingual, Quadrilingual, Quinquelingual and Six-Language Texts of the Chicago Convention. ICAO is the depositary of the fifteen Protocols of Amendment to the Chicago Convention.

2. ICAO is the depositary of the Geneva, Rome and Tokyo Conventions, the Montreal Protocol for the amendment of the Rome Convention, the Guatemala City Protocol, the Convention on the Marking of Plastic Explosives for the Purpose of Detection and the Montreal Convention (1999). The Government of Poland is the depositary of the Warsaw Convention, The Hague Protocol, Additional Protocols Nos. 1, 2 and 3 and Montreal Protocol No. 4, and the Government of Mexico, the depositary of the Guadalajara Convention. Depositaries of The Hague and Montreal (1971) Conventions are the Russian Federation, the United Kingdom and the United States. These three governments, together with ICAO, are also the depositaries of the Montreal Supplementary Protocol. UNIDROIT (the International Institute for the Unification of Private Law) is the depositary of the Cape Town Convention and the Cape Town Aircraft Protocol (2001).

* In addition, five accessions have been received which are reflected in the table on the following pages.

# Status of Certain International Air Law Instruments

(as at 30 June 2006)

**Note: A square indicates a ratification or adherence which has taken place since 30 June 2005.**

## STATES PARTIES

| | Chicago Convention (1944) | Article 93 *bis* (1947) | Article 45 (1954) | Articles 48(a), 49(e) and 61 (1954) | Article 50(a) (1961) | Article 48(a) (1962) | Article 50(a) (1971) | Article 56 (1971) | Article 50(a) (1974) | Final Paragraph, Russian Text (1977) | Article 83 *bis* (1980) | Article 3 *bis* (1984) | Article 56 (1989) | Article 50(a) (1990) | Final Paragraph, Arabic Text (1995) | Final Paragraph, Chinese Text (1998) | Authentic Trilingual Text (1968) | Authentic Quadrilingual Text (1977) | Authentic Quinquelingual Text (1995) | Authentic Six-Language Text (1998) | Transit Agreement (1944) | Transport Agreement (1944) | Warsaw Convention (1929) | Geneva Convention (1948) | Rome Convention (1952) | The Hague Protocol (1955) | Guadalajara Convention (1961) | Tokyo Convention (1963) | The Hague Convention (1970) | Guatemala City Protocol (1971) | Montreal Convention (1971) | Additional Protocol No. 1 (1975) | Additional Protocol No. 2 (1975) | Additional Protocol No. 3 (1975) | Montreal Protocol No. 4 (1975) | Montreal Protocol (1978) | Montreal Supplementary Protocol (1988) | Convention on Plastic Explosives (1991) | Montreal Convention (1999) | Cape Town Convention (2001) | Cape Town Aircraft Protocol (2001) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Afghanistan | • | • | • | • | | | | | | • | | | | | | | | | | • | • | | • | | | • | | • | • | | • | | | | | | | | | | |
| Albania | • | | | | | | | | | | • | | | | | | • | | | | • | | | | | | | • | • | | • | | | | | | • | • | • | | |
| Algeria | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | | | • | • | | • | | • | • | • | • | | • | • | | • | | | | | • | • | | | |
| Andorra | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | | | | | ■ | • | | ■ | | | | | ■ | ■ | | | |
| Angola | • | • | • | • | • | • | • | • | • | | | | | | | | • | | | | | | • | • | • | • | | • | • | | • | | | | | | | | ■ | ■ |
| Antigua and Barbuda | • | • | • | • | • | • | • | • | • | • | • | • | | | | | • | • | | | • | | | | | | | • | • | | • | | | | | | | | | |
| Argentina | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | | • | • | • | • | | • | • | | • | • | • | • | • | • | • | | | |
| Armenia | • | | | | | | | | | | • | • | | | | | • | | | | • | | • | | | | | • | • | | • | | | | | • | ■ | | | |
| Australia | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | | | • | • | • | • | | • | | | | • | • | | | | |
| Austria | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | | | • | | • | | | • | • | • | • | | • | | | | • | • | • | • | | |
| Azerbaijan | • | | | | | | | | | • | • | • | | | | | • | • | | | • | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | | | |
| Bahamas | • | • | • | • | • | | | | | | | | | | | | • | | | | • | | • | | | • | • | • | • | | • | | | | | | | | | |
| Bahrain | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • | | |
| Bangladesh | • | • | | | | | | | | • | • | • | • | | | | • | • | | | • | | • | • | | • | | • | • | | • | | | | | • | ■ | | | |
| Barbados | • | | | | | • | • | • | | • | • | • | | • | | | • | • | | | • | | • | | | | | • | • | | • | | | | | • | • | • | | |
| Belarus | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | | | | | • | | | • | • | • | • | | • | | | | | • | • | | | |
| Belgium | • | | • | • | • | | • | • | • | • | • | • | | • | | | • | • | | | • | | • | • | • | • | • | • | • | | • | | | | • | | • | | | |
| Belize | • | | | | | | | | | • | • | • | | | • | | • | | | | | | | | | | | • | • | | • | | | | | | • | | | | |
| Benin | • | | | | • | | • | • | • | • | • | • | • | • | | | | | | | • | | • | | • | • | | • | • | | • | | | | • | • | • | | | |
| Bhutan | • | | | | | | | | | | ■ | ■ | ■ | • | | | • | | | | | | | | | | | • | • | | • | | | | ■ | ■ | | | | |
| Bolivia | • | | • | • | | • | | • | | | • | • | | • | | | | | | • | • | • | • | • | • | | | • | • | | • | | | | • | • | | | | |
| Bosnia and Herzegovina | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | | | • | | • | • | | • | • | • | • | | • | • | • | | • | • | | | | |
| Botswana | • | • | • | • | | • | | • | • | • | • | • | • | • | • | | • | • | • | • | | | • | | | | | • | • | | • | | | | • | • | • | | | |
| Brazil | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | | | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | ■ | | |
| Brunei Darussalam | • | | • | • | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • | • | | • | | | | | • | • | | • | | | | | • | | | | | |
| Bulgaria | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | | | • | | • | | | • | | • | • | | • | | | | | • | • | • | | | |
| Burkina Faso | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | | • | | • | | | | • | • | • | | • | | | | • | • | | | | |
| Burundi | • | | | | | | | | | • | • | • | | | | | • | | | | • | • | | | | | | • | | | • | | | | | | | | | |
| Cambodia | • | | | | | | | | | | | | | • | | | | | | | | | • | | | • | | • | • | | • | | | | | • | | | | | |
| Cameroon | • | | • | • | • | • | | • | | | • | • | • | • | | | • | | | | • | | • | • | • | • | | • | • | | • | | | | | • | • | • | | | |
| Canada | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | | | • | • | • | • | | • | • | • | | • | • | • | • | | |
| Cape Verde | • | | | | | | | | • | | • | | • | • | | | • | | | | | | • | | | • | • | • | • | | • | | | | | • | • | • | | | |
| Central African Republic | • | • | • | • | • | | | | | | | | | | | | | | | | | | | • | | | | • | • | | • | | | | | • | | | | | |
| Chad | • | • | • | • | • | • | | • | | | | | | | | | • | | | | | | | • | | | • | • | • | | • | | | | | | | | | | |
| Chile | • | • | • | • | • | • | • | • | • | | • | • | • | • | | | | | | • | • | | • | • | | • | | • | • | | • | • | • | | | • | • | | | | |
| China | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | | • | | • | • | | • | | | | | • | | • | | | |
| Colombia | • | | | | | | | | • | | • | • | | • | | • | • | • | | • | | | • | | | • | • | • | • | • | • | • | • | • | • | | • | | | | |
| Comoros | • | | | | | | | | | | | | | | | | • | | | | | | • | | | | | • | • | | • | | | | | | | | | | |
| Congo | • | • | • | • | • | | | • | | | | | | | | | | | | | | | • | • | | • | | • | • | | • | | | | | | | | | | |
| Cook Islands | • | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | • | ■ | • | ■ | | | • | | | | • | | | | | | | • | ■ | | ■ | | | | | ■ | | | | | |
| Costa Rica | • | • | • | • | • | | • | | | | | | | | | | • | | | | • | • | • | | | • | | • | • | • | • | | | | | • | ■ | | | | |
| Côte d'Ivoire | • | • | • | • | • | • | | | | | | • | | | | | • | | | | • | | • | • | | • | | • | • | | • | | | | | | | | | | |
| Croatia | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | | • | • | | • | • | | • | • | • | • | | • | • | • | | • | • | | | | |
| Cuba | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | • | • | • | | • | • | • | • | | • | • | | • | • | • | | • | • | ■ | | | |
| Cyprus | • | • | • | • | • | • | • | • | • | • | • | • | | | | | • | • | | | • | | • | | | • | • | • | • | • | • | • | • | • | • | • | • | | | |
| Czech Republic | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | | • | | • | • | | • | • | • | • | | • | | | | | • | • | | | |
| Democratic People's Republic of Korea | • | | • | • | • | • | • | • | • | • | | | ■ | • | • | ■ | • | • | • | • | • | | • | | | • | | • | • | | • | | | | | • | | | | | |
| Democratic Republic of the Congo | • | | • | • | | | • | • | | | | | | | | | | | | | | | • | | | | | • | • | | • | | | | | | | | | | |
| Denmark | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | • | • | | • | • | • | • | • | • | • | • | | |
| Djibouti | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | • | • | | • | | | | | • | • | | | | |
| Dominica | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | ■ | | | | | ■ | | | | | |
| Dominican Republic | • | • | • | • | • | | | • | • | | ■ | | | | | | | | | | | | • | | | • | | • | • | • | • | | | | | | | | | | |
| Ecuador | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | • | | • | | • | • | • | • | | • | • | | • | | | | | • | • | ■ | | | |
| Egypt | • | • | • | • | • | | • | • | • | | • | • | • | • | | | • | • | • | | • | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | | | |
| El Salvador | • | • | • | • | • | • | • | • | • | | • | • | ■ | | | | | | | | • | • | | • | • | • | • | • | • | | • | | | | | • | • | | | | |
| Equatorial Guinea | • | | | | | | | | | | | | | | | | • | | | | | | • | | | | | • | • | | • | | | | | • | | | | | |
| Eritrea | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | | • | • | | | | | | | | | | | | | | | | | • | | | | |
| Estonia | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | | • | • | | • | • | • | • | | • | • | • | • | • | • | • | | | |
| Ethiopia | • | | • | • | • | | • | • | • | • | • | • | • | | | | | • | | | • | • | • | • | | | • | • | • | | • | • | • | • | • | • | | | • | • |
| Fiji | • | • | • | • | • | | | | • | | • | • | • | • | | | • | | | | • | | • | | | • | • | • | • | | • | | | | | • | | | | | |
| Finland | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | | | • | • | • | • | | • | • | • | | • | • | • | • | | |
| France | • | | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | • | | • | • | | • | • | • | • | | • | • | • | | • | • | • | | | |
| Gabon | • | | | | | | | • | | | | • | • | • | • | | • | | | | • | | • | • | • | • | • | • | • | | • | | | | | • | | | | | |
| Gambia | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | | | | • | • | | | • | • | | • | | | | | • | • | • | | | |
| Georgia | • | | | | | | | | | | • | ■ | | | | | • | | | | • | | | | | | | • | • | | • | | | | | • | • | | | | |

# Status of Certain International Air Law Instruments

(as at 30 June 2006)

**Note: A square indicates a ratification or adherence which has taken place since 30 June 2005.**

## STATES PARTIES

| STATES PARTIES | Chicago Convention (1944) | Article 93 *bis* (1947) | Article 45 (1954) | Articles 48(a), 49(e) and 61 (1954) | Article 50(a) (1961) | Article 48(a) (1962) | Article 50(a) (1971) | Article 56 (1971) | Article 50(a) (1974) | Final Paragraph, Russian Text (1977) | Article 83 *bis* (1980) | Article 3 *bis* (1984) | Article 56 (1989) | Article 50(a) (1990) | Final Paragraph, Arabic Text (1995) | Final Paragraph, Chinese Text (1998) | Authentic Trilingual Text (1968) | Authentic Quadrilingual Text (1977) | Authentic Quinquelingual Text (1995) | Authentic Six-Language Text (1998) | Transit Agreement (1944) | Transport Agreement (1944) | Warsaw Convention (1929) | Geneva Convention (1948) | Rome Convention (1952) | The Hague Protocol (1955) | Guadalajara Convention (1961) | Tokyo Convention (1963) | The Hague Convention (1970) | Guatemala City Protocol (1971) | Montreal Convention (1971) | Additional Protocol No. 1 (1975) | Additional Protocol No. 2 (1975) | Additional Protocol No. 3 (1975) | Montreal Protocol No. 4 (1975) | Montreal Protocol (1978) | Montreal Supplementary Protocol (1988) | Convention on Plastic Explosives (1991) | Montreal Convention (1999) | Cape Town Convention (2001) | Cape Town Aircraft Protocol (2001) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Germany | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | • | • | | • | | | | | • | • | • | | |
| Ghana | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | | | | | | | | • | • | | • | • | • | • | | • | • | • | • | | • | • | | | |
| Greece | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | • | | • | • | • | | |
| Grenada | • | | | | | | | | | | • | | • | • | | | • | | | | | | | • | | • | • | • | • | | • | | | | | | | | | |
| Guatemala | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | | • | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | | |
| Guinea | • | • | • | • | • | • | • | • | | | • | • | | • | | | | • | | | • | | • | • | • | • | • | • | • | | • | • | • | | • | • | | | |
| Guinea-Bissau | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | • | | • | | | | | | | | | |
| Guyana | • | • | | | | | • | • | • | • | • | • | | | | | | | | | • | | | | | | • | • | | | • | | | | | • | | | | |
| Haiti | • | | • | | | | | | | • | • | | | | | | | | | | | | | • | • | | • | • | | | • | | | | | | | | | |
| Honduras | • | | • | • | • | | | | | | | | | | | | | | | • | • | • | • | | • | | • | • | | | • | • | • | | • | • | | | |
| Hungary | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | | • | | • | • | | • | • | • | • | | • | | | • | • | • | • | | |
| Iceland | • | | • | • | | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | | • | • | | • | • | • | • | | • | | | | • | • | • | | |
| India | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | • | • | | • | | | • | | • | • | | • | | | | • | • | | | |
| Indonesia | • | • | • | • | • | • | • | • | • | • | • | | • | • | | | | | • | | • | | • | | | | | • | • | | • | | | | | | | | |
| Iran (Islamic Republic of) | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | • | | • | | • | | | • | • | • | • | | • | | | | • | | | | |
| Iraq | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | | • | | • | | • | • | • | • | • | • | • | | • | • | • | | • | | | | |
| Ireland | • | | • | • | • | • | • | • | • | | • | • | | | | | • | | | | • | | • | | | • | • | • | • | | • | • | • | • | • | • | • | ■ | ■ |
| Israel | • | | | • | • | • | • | • | | • | • | • | | | | | • | • | | | • | | • | | | • | • | • | • | | • | • | • | • | • | | | | |
| Italy | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | |
| Jamaica | • | • | • | • | • | • | • | • | • | | • | • | • | • | | | • | | | • | • | | | | | | • | • | • | | • | | | | ■ | ■ | | | |
| Japan | • | | • | • | • | • | • | • | • | | • | • | ■ | • | | | | | | | • | | • | | | • | | • | • | | • | | | • | • | • | • | | |
| Jordan | • | | | | • | | • | • | • | • | • | • | • | • | • | | • | | • | • | • | | • | | | • | | • | • | | • | • | • | | • | • | • | | |
| Kazakhstan | • | | | | | | | | | • | • | • | | | | | • | • | | | | | | | | • | | • | • | | • | | | | • | • | | | |
| Kenya | • | • | • | • | • | • | • | • | • | | • | • | | • | | | | • | | | | | • | • | • | • | | • | • | | • | • | • | | • | • | • | | |
| Kiribati | • | | | | | | | | | | | | | • | | | • | | | | | | | | | | | | | | | | | | | | | | | |
| Kuwait | • | | | | • | | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | | |
| Kyrgyzstan | • | | | | | | | | | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | • | • | | • | | | | • | • | | | |
| Lao People's Democratic Republic | • | | • | • | • | | • | • | | | | | | • | | | | | | | | | • | • | | • | | • | • | | • | | | | • | | | | |
| Latvia | • | | | | | | | | | • | • | • | • | • | | | • | • | | | • | | • | | | • | | • | • | | • | | | | • | • | • | | |
| Lebanon | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | | • | • | | • | • | • | • | • | • | • | • | | • | • | • | | |
| Lesotho | • | • | • | • | • | • | • | • | • | • | | • | • | • | | | • | | | | • | | • | | | • | • | • | • | | • | | | | | | | | |
| Liberia | • | | | | | | | | | | | | | | | | | | | | • | • | • | | | | | • | • | | • | | | | • | | | | |
| Libyan Arab Jamahiriya | • | | • | • | • | | • | • | • | • | • | • | • | • | | | | | • | | | | • | • | | • | • | • | • | | • | | | | • | • | | | |
| Liechtenstein | | | | | | | | | | | | | | | | | | | | | | | • | | | • | | • | • | | • | | | | • | • | | | |
| Lithuania | • | • | • | • | | | | • | | • | • | • | • | • | • | | • | | • | | | | | | | • | • | • | • | | • | | | | • | • | • | | |
| Luxembourg | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | | | | • | | • | • | • | • | • | • | • | | • | | | | • | | • | | |
| Madagascar | • | • | • | • | • | • | • | • | • | | • | • | | • | | | • | | | | • | | • | • | | • | | • | • | | • | | | | • | • | | | |
| Malawi | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | | | | • | | • | | | • | • | • | • | | • | | | | | | | | |
| Malaysia | • | • | • | • | • | • | • | | | • | • | | • | • | | | | | • | | • | | • | | | • | | • | • | | • | | | | | | | ■ | ■ |
| Maldives | • | | | | | | | | • | | • | • | • | • | • | | • | | • | | • | | • | • | • | • | | • | • | | • | | | | • | • | ■ | | |
| Mali | • | • | • | • | • | | • | • | • | | • | • | • | • | | | • | | • | | • | | • | • | • | • | • | • | • | | • | | | | • | • | | | |
| Malta | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | | • | | • | | | | | • | • | | • | | | | • | • | • | | |
| Marshall Islands | • | | | | | | | | | | • | | | | | | • | | | | | | | | | | | • | • | | • | | | | • | • | | | |
| Mauritania | • | • | • | • | • | | • | • | • | | | | | | | | • | • | • | | • | | • | • | • | | • | • | • | • | • | | | | • | | | | |
| Mauritius | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | • | • | | • | | | | • | | | | |
| Mexico | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | • | • | | • | • | • | | • | • | • | | |
| Micronesia (Federated States of) | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | • | | | | • | | | | |
| Monaco | • | | | | | | | | | • | • | • | • | | • | • | • | | • | • | • | | | • | | • | | • | • | | • | | | | • | • | • | | |
| Mongolia | • | | | | | | | | | | • | • | • | • | | | • | • | | | • | | • | | | | | • | • | | • | | | | • | • | • | | |
| Morocco | • | • | • | • | • | | • | • | • | | • | • | • | • | | | | • | • | | • | | • | • | • | • | • | • | • | | • | | | | • | | | | |
| Mozambique | • | | | | | | | | | | | | • | • | | | • | | | | | | | | | | | • | • | | • | | | | • | ■ | | | |
| Myanmar | • | • | | • | | | • | • | | | | | | • | | | | | | | | | • | | | | | • | • | | • | | | | • | • | | | |
| Namibia | • | | | | | | | | | • | ■ | ■ | • | • | • | • | • | • | • | • | | | | | | | | ■ | ■ | | ■ | | | | ■ | | • | | |
| Nauru | • | | • | • | | | • | • | | | • | | • | | | | • | • | | | • | | • | | | • | | • | • | | • | | | | ■ | ■ | | | |
| Nepal | • | | | • | | | | | • | • | • | • | • | | | | | | | | • | | • | | | • | | • | • | | • | | | | | | | | |
| Netherlands | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | • | • | • | • | | |
| New Zealand | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | • | • | • | • | • | | • | | | • | • | • | • | | • | • | • | • | • | • | | | |
| Nicaragua | • | • | • | • | • | | • | • | • | | | | | | | | • | | | | • | | | | | | | • | • | | • | | | | • | ■ | | | |
| Niger | • | • | • | • | • | • | • | • | • | • | • | • | | | | | • | • | | | • | | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | |
| Nigeria | • | • | • | | • | | • | | | | • | • | • | • | | | • | | • | | • | | • | • | | • | • | • | • | | • | | | | • | • | • | • | • |
| Norway | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | | • | • | | • | | • | • | | • | • | • | • | • | • | • | | |
| Oman | • | | • | • | | • | | • | • | • | • | • | • | • | • | • | • | | • | | • | | • | • | • | • | | • | • | | • | | • | | • | • | | • | • |
| Pakistan | • | • | • | • | • | • | • | • | • | • | • | • | | ■ | | | • | • | | • | • | | • | • | • | • | • | • | • | | • | | | | • | | | • | • |
| Palau | • | | | | | | | | | | | | • | | | | • | | | | • | | | | | | | • | • | | • | | | | • | • | | | |
| Panama | • | • | • | • | • | | • | • | • | | • | • | • | • | | | • | | | | • | | • | • | | • | | • | • | | • | | | | • | • | • | • | • |

## Status of Certain International Air Law Instruments

(as at 30 June 2006)

**Note: A square indicates a ratification or adherence which has taken place since 30 June 2005.**

| STATES PARTIES | Chicago Convention (1944) | Article 93 *bis* (1947) | Article 45 (1954) | Articles 48(a), 49(e) and 61 (1954) | Article 50(a) (1961) | Article 48(a) (1962) | Article 50(a) (1971) | Article 56 (1971) | Article 50(a) (1974) | Final Paragraph, Russian Text (1977) | Article 83 *bis* (1980) | Article 3 *bis* (1984) | Article 56 (1989) | Article 50(a) (1990) | Final Paragraph, Arabic Text (1995) | Final Paragraph, Chinese Text (1998) | Authentic Trilingual Text (1968) | Authentic Quadrilingual Text (1977) | Authentic Quinquelingual Text (1995) | Authentic Six-Language Text (1998) | Transit Agreement (1944) | Transport Agreement (1944) | Warsaw Convention (1929) | Geneva Convention (1948) | Rome Convention (1952) | The Hague Protocol (1955) | Guadalajara Convention (1961) | Tokyo Convention (1963) | The Hague Convention (1970) | Guatemala City Protocol (1971) | Montreal Convention (1971) | Additional Protocol No. 1 (1975) | Additional Protocol No. 2 (1975) | Additional Protocol No. 3 (1975) | Montreal Protocol No. 4 (1975) | Montreal Protocol (1978) | Montreal Supplementary Protocol (1988) | Convention on Plastic Explosives (1991) | Montreal Convention (1999) | Cape Town Convention (2001) | Cape Town Aircraft Protocol (2001) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Papua New Guinea | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | | | | • | | • | | • | • | • | • | • | | • | | | | | | • | | | | |
| Paraguay | • | • | • | • | • | | | • | | • | • | • | ■ | • | | | ■ | | • | ■ | • | • | • | • | • | • | • | • | • | | • | | | | | | • | • | • | | |
| Peru | • | | • | • | • | | | | • | | • | | • | • | | • | • | | • | • | | | • | | | • | • | • | • | | • | • | • | | | | • | • | • | | |
| Philippines | • | • | • | • | • | • | • | • | | | • | | • | • | | | • | • | | | • | | • | • | | • | • | • | • | | • | | | | | | • | • | | | |
| Poland | • | • | • | • | • | • | • | • | • | • | • | • | | | | | • | • | | | • | | • | | | • | • | • | • | | • | | | | | | • | | ■ | | |
| Portugal | • | | • | • | • | • | • | | | | • | • | • | • | | | • | • | • | | • | | • | • | | • | | • | • | | • | • | • | • | • | | • | • | • | | |
| Qatar | • | | | | | | | • | • | | • | • | | | | | • | | | | | | • | | | • | | • | • | | • | | | | | ■ | • | • | | | |
| Republic of Korea | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | • | • | • | | | | | • | | • | • | | • | | | | | | • | • | | | |
| Republic of Moldova | • | • | • | • | • | • | • | • | • | • | • | • | | • | | | • | • | | | • | | • | | • | • | • | • | • | | • | | | | | | • | • | | | |
| Romania | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | | | | | • | • | | • | • | • | • | | • | | | | | | • | • | • | | |
| Russian Federation | • | | • | • | • | • | • | • | • | • | • | • | ■ | ■ | ■ | ■ | • | • | | | | | • | | • | • | • | • | • | | • | | | | | | • | | | | |
| Rwanda | • | • | • | • | • | • | • | • | | | | | | | | | • | | | | • | | • | • | • | • | • | • | • | | • | | | | | | • | | | | |
| Saint Kitts and Nevis | • | • | • | • | • | • | • | • | • | • | • | • | | • | | | • | • | | | | | | | | | | | | | | | | | | | • | | | | |
| Saint Lucia | • | | | | | | | | | | | | | • | | | • | | | | | | | | | | | • | • | | • | | | | | | • | | | | |
| Saint Vincent and the Grenadines | • | | | | | | | | | | | | | • | | | • | | | | | | • | | | • | | • | • | | • | | | | | | • | | • | | |
| Samoa | • | | | | | | | | | | • | • | • | • | | | • | | | | | | • | | | • | | • | • | | • | | | | | | • | • | | | |
| San Marino | • | • | • | • | | • | | • | • | • | • | • | • | • | | | • | | | | | | | | | | | | | | | | | | | | | | | | |
| Sao Tome and Principe | • | • | • | • | • | • | • | • | • | | | | | | | | • | | | | | | | | | | | ■ | ■ | | ■ | | | | | ■ | | | | |
| Saudi Arabia | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | | • | | | | • | | | • | • | • | • | | • | | | | | | • | • | • | | |
| Senegal | • | • | • | • | • | • | • | • | • | • | | • | ■ | • | | | | | | | • | | • | • | | • | | • | • | | • | | | | | | • | • | | ■ | ■ |
| Serbia | • | • | • | • | • | • | • | • | • | • | • | • | | | | | • | • | | | • | | • | • | | • | • | • | • | | • | • | • | | • | • | ■ | | | |
| Seychelles | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | | | • | | • | • | • | • | • | • | • | • | • | | | | | | • | • | | | |
| Sierra Leone | • | | | | • | | | | | | | | | | | | | | | | | | • | | | | | • | • | | • | | | | | | | | | | |
| Singapore | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | • | • | | • | | | • | | • | • | | • | | | | | | • | • | | | |
| Slovakia | • | | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | | | • | • | | • | | | • | • | • | • | | • | | | | | | • | • | • | | |
| Slovenia | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | | • | | • | | • | • | | • | • | • | • | | • | • | • | | • | | • | • | • | | |
| Solomon Islands | • | | | | | | | | | | | | | • | | | • | | | | | | • | | | • | • | • | | | • | | | | | | | | | | |
| Somalia | • | • | • | • | • | • | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | | | | | | |
| South Africa | • | • | • | • | • | • | • | • | | | • | • | • | • | | | • | | | | • | | • | • | | • | • | • | • | | • | | | | | | • | • | | | |
| Spain | • | | • | • | • | | • | • | • | • | • | • | • | • | • | | • | • | • | | • | | • | | • | • | | • | • | | • | • | • | • | • | | • | • | • | | |
| Sri Lanka | • | • | • | • | • | | • | • | | • | • | | | • | | | | | | | • | | • | • | • | • | | • | • | | • | | | | | | • | • | | | |
| Sudan | • | • | • | • | • | | • | | • | | | | | | | | | | • | | | | • | | | • | | • | • | | • | | | | | | • | • | | | |
| Suriname | • | • | • | • | • | • | • | | • | ■ | • | • | | • | ■ | ■ | • | ■ | ■ | ■ | | | • | • | • | • | | • | • | | • | | | | | • | • | • | | | |
| Swaziland | • | • | • | • | • | • | • | • | • | | | | • | • | | | • | | | | • | | | | | • | • | • | • | | • | | | | | | | • | | | |
| Sweden | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | | • | • | | • | • | • | • | | • | • | • | | • | | • | • | | | |
| Switzerland | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | | • | • | • | • | | • | • | • | • | • | | • | • | ■ | | |
| Syrian Arab Republic | • | • | • | • | • | • | • | • | • | • | | • | | | | | • | | | | ■ | | • | | | • | | • | • | | • | | | | | | • | • | • | | |
| Tajikistan | • | | | | | | | | | • | • | • | | | | | • | • | | | | | | • | | | | • | • | | • | | | | | | • | | | | |
| Thailand | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | | | • | | • | | | • | | | | • | • | | • | | | | | | • | ■ | | | |
| The former Yugoslav Republic of Macedonia | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | • | • | | • | • | • | | • | | • | • | • | | |
| Timor-Leste | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | | | |
| Togo | • | | | | | | • | | • | • | • | • | • | • | | | • | | | | • | | • | • | • | • | • | • | • | • | • | • | • | | • | | • | • | | | |
| Tonga | • | • | • | • | • | • | • | • | • | | • | • | • | • | | | • | | | | | | • | | | • | | • | • | | • | | | | | | • | • | • | | |
| Trinidad and Tobago | • | | | | | | • | • | | | • | | | | | | | | • | | • | | • | | | • | | • | • | | • | | | | | | • | • | | | |
| Tunisia | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | | • | • | • | | • | | • | • | • | • | • | • | • | | • | • | • | | | | • | • | | | |
| Turkey | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | • | • | • | • | • | | | • | | • | • | | • | | | | • | | • | • | | | |
| Turkmenistan | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | | | | | | • | • | | | | • | • | | • | | | | | | • | • | | | |
| Uganda | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | | | | | | • | | | | | • | • | | • | | | | | | • | • | | | |
| Ukraine | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | | • | | • | | | • | • | • | • | | • | | | | | | • | • | | | |
| United Arab Emirates | • | | | | | | | | | • | • | • | • | • | • | | • | | • | • | • | | • | | • | • | | • | • | | • | | | | | • | • | • | • | | |
| United Kingdom | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | • | • | • | • | • | | • | | | • | • | • | • | | • | • | • | • | • | | • | • | • | | |
| United Republic of Tanzania | • | • | • | • | • | • | • | • | • | | • | • | • | • | | | • | | | • | | | • | | | | | • | • | | • | | | | | | • | • | • | | |
| United States | • | | | • | • | • | • | • | • | • | • | | • | | | | • | • | | | • | | • | • | | • | | • | • | | • | | | | | • | • | • | • | • | • |
| Uruguay | • | • | | • | | • | • | • | • | • | • | • | • | • | | | • | | • | | | | • | • | • | | | • | • | | • | | | | | | • | • | | | |
| Uzbekistan | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | | • | | • | | • | • | | • | • | • | • | | • | • | • | | • | | • | • | | | |
| Vanuatu | • | • | • | • | | • | | • | • | • | • | ■ | • | ■ | ■ | ■ | • | | | | • | | • | | • | • | | • | • | | • | | | | | ■ | ■ | ■ | | | |
| Venezuela | • | • | • | • | • | • | | • | • | | • | | | | | | • | • | | | • | | • | | | • | | • | • | | • | • | • | | | | | | | | |
| Viet Nam | • | • | • | • | | • | | | | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | • | • | | • | | | | | | • | | | | |
| Yemen | • | | | | | | • | | • | • | | | | | | | • | | • | | | | • | | • | • | | • | • | | • | | | | | | | | | | |
| Zambia | • | • | • | • | • | • | • | • | | • | • | | | • | | | • | | | | • | | • | | | • | • | • | • | | • | | | | | | | • | | | |
| Zimbabwe | • | | | | | | | | | | | | ■ | • | | | • | | | | | | • | • | | • | • | • | • | | • | | | | | | | | | | |

*NOTE: In addition to the States Parties identified in this table, one Regional Economic Integration Organization, the European Community, is a party to the Montreal Convention (1999).*

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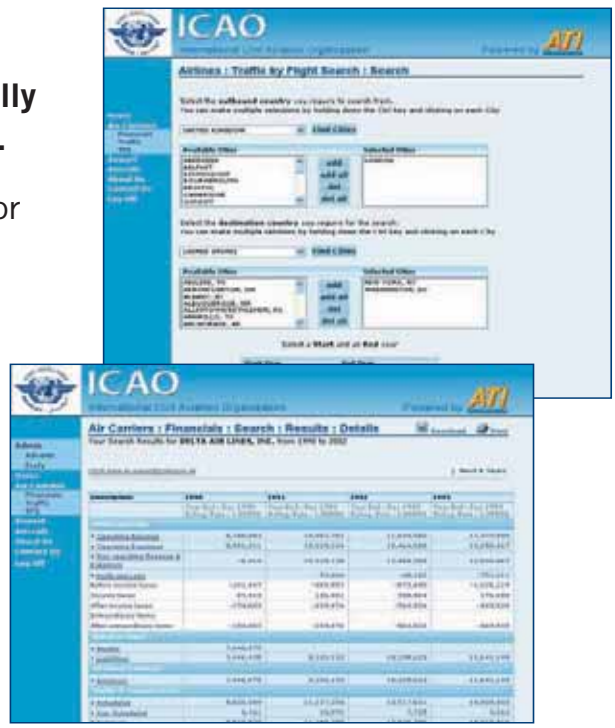


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# Security experts study threat raised by thwarted terrorist plot

The planned terrorist plot to sabotage several airliners over the North Atlantic that was disclosed by U.K. authorities in mid-August has been placed at the top of the agenda for a September meeting of the ICAO Aviation Security (AVSEC) Panel.

A special meeting of the ICAO Council, convened on 17 August in response to the uncovering of the alleged terrorist plot, called for the AVSEC Panel to give the highest priority to addressing the new security concern. The panel of experts, scheduled to meet from 11 to 15 September, has been requested to fully assess the danger associated with liquid explosives made from readily available ingredients, and to report as quickly as possible on practical and sustainable measures for further improving the security of civil aviation.

Following the events of 11 September 2001, the AVSEC Panel had developed a list of items to be prohibited in the cabin of an aircraft. In reaction to intelligence about a particular threat, States can prohibit additional carry-on items, as was the case immediately following the disclosure of the planned terrorist plot. Additional or more stringent provisions may now be necessary.

"Our permanent challenge," emphasized ICAO Council President Roberto Kobeh González, "is to provide optimum security while minimizing the impact of tighter security measures on passenger service." The Council President underscored the importance of cooperation among all stakeholders, including police and government authorities.

Aviation security provisions contained in ICAO Annex 17 were strengthened following 9/11, and many new standards related to security in other annexes to the Chicago Convention have also been adopted. These include improved security measures on the ground and around the cockpit area of aircraft, such as the requirement for reinforced and secure cockpit doors. Other in-flight security measures, including those involving crew communications and coordination and live situational training exercises, have also been adopted. Moreover, the latest revision to Annex 17, which became effective on 1 July 2006, contains stricter provisions for passengers and cabin baggage, and calls for 100 percent screening of all baggage carried in the cargo hold of aircraft.

In support of the panel's September meeting, the Council called on the ICAO Secretariat to produce information on a coordinated range of mechanisms for dealing with threats in the mid- to long-term, including an internationally consistent set of possible aviation security measures and technical advice on issues such as training, screening and human factors.

The Council also encouraged States to participate in a network for sharing information on imminent threats to civil aviation, developed recently by the organization. The network, to enter operation in September 2006, will ultimately serve as a link among international aviation security officials in all 189 ICAO Contracting States.

The special Council meeting of 17 August was attended by representatives of the International Air Transport Association (IATA) and the Airports Council International (ACI), who made presentations on the future handling of security issues.

Assistance with resolving security-related deficiencies identified by ICAO audits is available from the organization, which recently created the Coordinated Assistance and Development Section for this purpose. □

**AVSEC/FAL SEMINAR**

A seminar on aviation security and facilitation was conducted in Santo Domingo at the end of June 2006. Hosted by the Government of the Dominican Republic, the event attracted 120 participants from the North American, Caribbean and South American regions, a gathering that represented 15 States, five international organizations and 10 companies. Important subjects such as the generation of safety integration models and facilitation at the national level, the development of machine readable travel documents and e-passports were discussed, as well as hold baggage screening and detection of explosives. Participants highlighted the need to continue to hold events dealing with these subjects as well as the need for greater technical cooperation in this area.

## New branch to administer ICAO audits

ICAO recently completed an administrative integration of its Universal Safety Oversight Audit Programme (USOAP) and Universal Security Audit Programme (USAP). The programmes are now part of the newly created Safety and Security Audits (SSA) Branch, which reports directly to ICAO's Secretary General. The new branch comprises three sections: the existing Safety Oversight Audit (SOA) and Aviation Security Audit (ASA) sections, plus the new Audit Coordination and Reporting (ACR) Section. The new structure provides a clear organizational separation between ICAO bureaus responsible for developing standards and the staff members responsible for

auditing compliance with standards and providing remedial assistance to States. A study on the new organizational structure confirms initial expectations that the integration will lead to administrative efficiencies, while respecting the requirement for the two audit programmes to remain functionally and technically independent.

USOAP, formed in 1999 as part of the Air Navigation Bureau, and USAP, set up in 2002 as part of the Air Transport Bureau, both perform mandatory audits of ICAO's member States. □

## PANS-TRG to become applicable in November

The first edition of the *Procedures for Air Navigation Services — Training* (PANS-TRG, Document 9868) will become applicable on 23 November 2006, the date by which ICAO Contracting States are expected to implement its provisions. ICAO anticipated that the newly approved document would be forwarded to its member States during October 2006.

Document 9868 contains general procedures for the design, development and implementation of competency-based training and assessment and specific procedures related to the multi-crew pilot licence (MPL). It includes a graphic representation of the MPL training scheme, guidelines for the implementation of the MPL, and a description of the qualifications and competencies required of instructors and examiners employed in an MPL training programme.

Where the provisions of PANS-TRG are not implemented by a Contracting State, the State is required to publish in its *Aeronautical Information Publication* a list of any significant differences which exist on 23 November 2006 between these provisions and its national regulations and practices. □

## Conference focuses on aviation English proficiency

A three-day conference on aviation English held recently in Singapore attracted 100 participants from 31 countries and international organizations. Organized by the Singapore Aviation Academy (SAA), the conference provided an in-depth review of the ICAO language proficiency requirements, including the holistic descriptors and rating scale used in assessing aviation English proficiency, methods for testing and certifying language proficiency, and training strategies for meeting ICAO standards.

As a result of new provisions introduced in ICAO Annex 1 in 2003, pilots and controllers involved in international civil aviation are required by March 2008 to demonstrate a sufficient level of proficiency in aviation English.

Among those addressing the conference were the Director-General of the Civil Aviation Authority of Singapore (CAAS), the President of the ICAO Air Navigation Commission and the Asia/Pacific regional representative of the International Federation of Air Traffic Controllers' Associations (IFATCA). The conference considered the new requirements from the perspectives of both pilots and air traffic controllers.

To further assist States in preparing for the new standards, later this year SAA will introduce new programmes for training language testers, as well as specialized language training for pilots and controllers who fail to demonstrate the required level of proficiency. □

## ICAO Council appointment

*S. Elazab (Egypt)*

Shawky Elazab has been appointed Representative of Egypt on the Council of ICAO. Mr. Elazab's appointment took effect on 10 August 2006.

Mr. Elazab obtained a bachelor's degree specializing in air navigation from the Egyptian Air Academy, and holds licences in flight dispatch and flight navigation with the Egyptian Civil Aviation Authority. He also completed the senior civil aviation management course offered by the International Air Transport Association (IATA) Institute in Canada.

Over the course of his career with the Egyptian Air Force, Mr. Elazab served in several high-level positions, including those of Chief of the Meteorological Branch, Chief of the Regional Airspace Security Branch, and Chief of the Planning and Coordination Branch. More recently, Mr. Elazab has held the positions of Vice-Chairman, and subsequently Chief of the Air Navigation Department. With Egypt's Ministry of Civil Aviation, Mr. Elazab has served as Head of the Central Administration for International and Internal Affairs, Head of the Quality Assurance Sector, and Vice-Chairman of the Civil Aviation Authority.

Mr. Elazab was the chief organizer of the ICAO Facilitation Division, 12th Session, which was convened in Cairo in March-April of 2004. □

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## Comments sought on proposed change to ACAS procedures

ICAO is seeking comments from its 189 member States on a proposed amendment to Document 4444, *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM), that clarifies the role of air traffic controllers and flight crews in the operation of an airborne collision avoidance system (ACAS) and in responding to ACAS advisories. States have been asked to indicate no later than 30 November 2006 whether they agree or disagree with the proposed changes to the ACAS procedures.

The proposed amendment complements a previous proposal to amend Volume I (*Flight Procedures*) of ICAO Document 8168, *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS), which would require that pilots inform the appropriate air traffic control (ATC) unit of an ACAS resolution advisory (RA) only when the RA requires deviation from the current ATC instruction or clearance. States have been invited to comment on this aspect of ACAS operation in light of such factors as controller and pilot workload, frequency congestion, automated means of gathering data on those RAs not requiring deviation from the current ATC clearance, and the percentage of total RAs represented by such advisories. It is expected that the responses from States will reflect the perspectives and experiences of all involved including aircraft operators, flight crews and ATC personnel.

States were encouraged to provide ICAO with information about their RA data collection and analysis programmes, as well as specific views on alternative ways of gathering data (i.e. other than communication between the pilot and controller). □

## Work focuses on reducing the risk of pandemic influenza

ICAO has completed draft guidelines that States can apply to reduce the risk of pandemic influenza. The guidelines are currently undergoing review and will be posted at the ICAO website by the end of the year.

The preparedness guidelines were developed over a period of months in coordination with the World Health Organization (WHO), the Airports Council International (ACI), the International Air Transport Association (IATA) and the Centers for Disease Control and Prevention. More detailed guidelines written specifically for airports (in draft form) and for airlines are available on the websites of ACI and IATA, respectively.

Aside from developing guidelines, ICAO has been active in cooperative and educational efforts to reduce the risk of the spread of influenza through air transport. With support from the governments of Singapore and China, it conducted a workshop on avian influenza in Singapore in early 2006, and has also developed a technical cooperation project on cooperative arrangements for preventing the spread of communicable diseases through air travel, a project known as CAPSCA. A follow-up workshop on risk reduction, open to Asia/Pacific States, is scheduled for Singapore in late September.

The new technical cooperation project, initially intended only for the Asia/Pacific region, aims to reduce the pandemic risk from influenza and similar diseases through cooperative arrangements between participating States, administrations and airports, and should facilitate a harmonized approach to preparedness planning. Civil aviation authorities throughout the region are invited to join the project, which will establish a group of experts to provide ongoing advice in the region. If successful, the project may be implemented in other regions as well to facilitate globally harmonized preparedness planning. □

## Invasive Species Programme hopes to advance ICAO's work

The Global Invasive Species Programme (GISP), set up in 1997 to conserve the planet's biodiversity by promoting global cooperation in invasive species prevention and management, is attempting to raise the funds needed to complete an analysis of a survey performed by ICAO in 2005. Although 35 States responded to ICAO's request for information on the best practices followed by their various agencies to prevent the introduction of invasive alien species by air transport, the data has not yet been analysed or used by ICAO to develop guidance material, as originally intended, because of competing priorities.

The problem of invasive alien species, which are plants or animals that threaten indigenous species after becoming established in a new environment, was first addressed by ICAO in 1998, when the 32nd Session of the Assembly directed the organization to determine how it might assist Contracting States in their efforts to reduce the risk of introducing potentially invasive species. In 2004, the 35th Session of the ICAO Assembly requested development of guidance material and, if appropriate, standards and recommended practices on the matter.

Air transport is one important pathway by which species are moved intentionally or unintentionally beyond natural barriers. The economic costs associated with the impact of invasive alien species on farmland, forests and human health, as well as efforts to control invading species, is estimated to be in the hundreds of billions of dollars.

While many governments have developed guidelines and procedures specific to civil aviation, there is still little guidance at the international level that can be used by countries worldwide as a basis for developing national policies and measures to address invasive alien species in civil air transport.

If successful in raising sufficient funds, GISP hopes to prepare guidance material based on its analysis of the ICAO survey responses. Airport authorities, airlines or other donors interested in supporting this effort should contact GISP directly (e-mail Philip Ivey at ivey@sanbi.org).

The important links between civil air transport and invasive alien species will be explored in more detail in a forthcoming article to be published in *ICAO Journal* in early 2007. □

## Safety management focus

*ICAO Journal* Issue 6/2006, which is scheduled to appear in mid-December, will feature several articles on the subject of safety management systems and their implementation. □

## ICAO Council appointment

*M. Rauhullah (Pakistan)*

Muhammad Rauhullah has been appointed Representative of Pakistan on the Council of ICAO. His tenure commenced on 2 July 2006.

Mr. Rauhullah holds a bachelor of science degree in electrical engineering from the University of Mississippi in the United States. He completed a master of science degree in the field of industrial engineering, complemented by a diploma in mechanical trade, at the Louisiana State University. He also completed advanced-level training courses sponsored by ICAO/UNDP as well as on-the-job training and courses provided by the U.S. Federal Aviation Administration.

Mr. Rauhullah served in a number of positions of increasing responsibility with the Civil Aviation Authority of Pakistan, and had exposure to a variety of aviation matters. He has experience in different spheres of heavy industry and aviation, and played an active role with his administration in developing regional aviation programmes and trainer projects. As local team leader, he contributed extensively to a project organized by Germany related to the development of an international airport. He has headed various boards and committees with objectives and goals related to aviation.

Mr. Rauhullah has also contributed indirectly to various ICAO programmes including the Universal Safety Oversight Audit Programme (USOAP), the Universal Security Audit Programme (USAP), the Cooperative Development of Operational Safety and Continuing Airworthiness Programme in South Asia (COSCAP-SA), and in airport certification. □


**LEGAL SEMINAR**

An ICAO seminar on legal matters was conducted in Seoul in mid-May 2006. Hosted by the Government of the Republic of Korea, the event was attended by 71 participants from the Asia/Pacific region. Topics included developments relating to the Montreal Convention of 1999, regional arrangements for air transport liberalization, modernization of the Rome Convention of 1952, the Cape Town Convention and Protocol of 2001, aviation security, the issue of unruly passengers, and the ratification of legal instruments as well as the registration of agreements with ICAO.

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- *Aeronautical Meteorology*

Applicants can also find the current and prospective lists of vacant posts on the ICAO TCB website: **www.icao.int/icao/en/tcb**

## ICAO Council appointment

*T. Ma (China)*

Tao Ma has been appointed the Representative of China on the Council of ICAO. Mr. Ma's tenure commenced on 1 September 2006.

A graduate of the University of Civil Aviation of China, Mr. Ma holds a master's degree in aviation safety management. Following graduation in 1983, he joined the General Administration of Civil Aviation of China (CAAC), initially at a post in the Flight Training Division concerned mainly with flight operations and licensing standards. He was promoted in 1995 to Director of the Flight Standards Liaison Division, where he was responsible for building relations with other countries with respect to flight standards and air safety matters. Mr. Ma was promoted in 1998 to Assistant Director General, and in 2002 to Deputy Director General, of the Department of Flight Standards. In the latter post, where he served until his appointment to the ICAO Council, he provided overall national policy direction for the development of flight standards, specifically for general aviation, pilot training and licensing, and aeronautical medicine.

Mr. Ma has completed various training courses outside China, including courses in flight operations inspection and executive development in Europe, and acquired his private pilot licence in Australia. He currently holds a commercial pilot's licence issued by the CAAC.

Mr. Ma has been involved in a number of international programmes. He served as Acting Chairman of an innovative safety initiative known as the Cooperative Development of Operational Safety and Continuing Airworthiness Programme — North Asia (COSCAP-NA). He was also Co-Chairman of an aviation cooperation programme involving China and the United States, and served as a member of the ICAO Proficiency Requirements in Common English Study Group. □

## Calculating airline capacity

*continued from page 18*

capacity produced to obtain the load factor. In general, for air carriers with a mixed load of passengers and cargo, the passenger load factor and the total weight load factor differ as the latter also takes freight and mail into account. For example, in 2005 the average passenger load factor on total worldwide scheduled services was estimated at 75 percent, whereas the total weight load factor was just 63 percent. However, in the case of air carriers that only carry passengers, these two load factors should be identical since the available capacity is limited to the number of seats available for sale.

As indicated above, it is important to know the total production volume and production unit costs of an enterprise. Some may argue that strictly speaking this may not be necessary provided one applies the same methodology year after year so that the air carrier can track trends in their own production costs and load factors. This is true. However, what an air carrier would not be able to do is to benchmark itself against other carriers performing similar operations. In addition, air carriers that are publicly traded would not be providing shareholders and

financial analysts with a true and fair account of their production costs and their efficiency in selling their production in the marketplace. □

## Annual Review

*continued from page 30*

to work in its field projects during all or part of last year, including 78 experts who were already in the field at the beginning of 2005. During the year, 363 new experts were recruited, either to fill new posts or to serve as replacements, and 22 posts were filled through transfers and promotions. The major fields of expertise for which experts were recruited last year included: civil aviation administration (62 posts); field project administration (29); aviation electronics (69); aviation training (9); aircraft accident investigation and prevention (13); airport planning, development and operations (103); airport operations (12); aeronautical meteorology (9); aircraft operations (16); aviation security (20); air traffic services (31); and aircraft airworthiness, manufacturing and maintenance (8).

Expert services in the field totalled more than 615 work-months in 2005, compared with 937.5 work-months in the previous year.

ICAO also procured equipment for field projects valued at $81.3 million, compared with $88.5 million in the previous year. Among examples of equipment purchases and contracts issued last year were the acquisition of an aerodrome air traffic control (ATC) simulator valued at over $2 million for Ethiopia; the installation of parking and access bridges for Guatemala at a cost of more than $7 million; the provision of an integrated airport system of management, valued at $6 million, for Panama; radar equipment for Venezuela, valued at over $14.3 million; and the acquisition of airport rescue and fire-fighting vehicles — also for Venezuela — at a cost of some $4.5 million. In all, ICAO issued 445 purchase orders and subcontracts with respect to field projects in 2005, compared with 354 in the previous year.

*Fellowship awards*. During the year a total of 509 fellowship training awards were granted by ICAO, a decrease of 44 awards compared with 2004. Of the 2005 total, 473 fellowships, or 93 percent of the total fellowships awarded, were implemented.

The number of fellowships awarded under trust fund projects amounted to 373 in 2005, a significant increase from 347 in 2004, while fellowships awarded under United Nations Development Programme (UNDP) projects accounted for the remainder, or 136. Considering that the UNDP fellowships involved cost-sharing with governments, however, the fellowships programme of 2005 — as in other recent years — was funded almost entirely by the developing countries themselves, a situation that reflects the commitment of governments to training their own civil aviation staff. This trend is compensating for the gap created by a continuous decline in traditional UNDP funding of human resources development in the civil aviation sector.

Of the fellowships implemented, 145 fellows, representing 31 percent of the total, attended courses at training centres in developing countries that had been established or expanded with ICAO's involvement. The remainder received training at other facilities around the world. The average duration of a fellowship was between two to three weeks at an average cost, including tuition fees, travel and living expenses, of $6,395.

A total of 43 awards were issued to participants from 23 countries under the ICAO-Singapore Developing Country Training Programme, which was established in 2001. The current training programme, sponsored by the Government of Singapore and administered by ICAO, focuses on integrated safety management systems, safety oversight, civil aviation management, and CNS/ATM developments.

*Associate experts programme*. Agreements exist between ICAO and several governments, specifically Belgium, Denmark, Finland, France, Germany, Italy, Japan and Sweden, through which these countries provide associate experts to assist ICAO experts in the field or at regional offices or headquarters. During 2005, one associate expert was assigned to ICAO headquarters in Montreal, and another joined the Asia and Pacific Office in Bangkok.

*Programme implementation*. The total programme implementation last year amounted to $115.9 million, compared with $120.3 million in 2004. Support costs totalled $6.2 million.

Total UNDP project implementation, which for the most part involved cost sharing by the governments involved and included projects for which ICAO acted as the implementing agency, amounted to $5.8 million in 2005, compared with $11.6 million in 2004 and $14 million in 2003. Of the 2005 total, over 97 percent of the funding was contributed by governments.

Total implementation of trust fund projects, including a mechanism established to raise funding for technical cooperation activities, rose to $29.2 million from $18 million in 2004, an increase of 62 percent. The trust fund programme, which depends on country funds placed in trust with ICAO, involved 49 country-based projects and nine inter-country projects during the year.

Contributions made to the ICAO Objectives Implementation Funding Mechanism in 2005 included $463,507 from the European Commission and $200,000 each from Airbus and The Boeing Co. Other sources of external funding last year were the Asian Development Bank, Bombardier, Embraer, the Government of France, the International Financial Facility for Aviation Safety (IFFAS), the Inter-American Development Bank, the Government of Spain, the United Nations Department of Peacekeeping Operations (UNDPKO), and the World Bank.

Equipment expenditures by the Civil Aviation Purchasing Service (CAPS), which is in effect another form of trust fund, declined to $7.1 million last year, from $15.5 million in 2004 and $51 million in 2003. At year's end, 118 governments and organizations were registered to use CAPS, a service established by ICAO in 1974 to assist developing countries in the procurement of aviation equipment.

The total implementation of management service agreement (MSA) projects amounted to $73.7 million, little changed from 2004, when the MSA programme implementation totalled $75.2 million.

AIR NAVIGATION ▮ Early last year the minimum vertical distance between aircraft operating in the airspace of North, Central and South America was reduced by half, resulting in more efficient flight operations and related benefits for airlines, passengers and the environment. Similarly, reduced vertical separation minimum (RVSM) was implemented in the airspace over Armenia, Azerbaijan, Georgia and the high seas portion of the Russian Federation Rostov flight information region (FIR).

By providing for 1,000 feet of separation for aircraft flying between flight level (FL) 290 and FL410, RVSM offers access to more efficient cruising levels. The benefits include less fuel burn and related cost savings for airlines as well as reduced pollution

## ICAO Council appointment

*M. Rossell (United Kingdom)*

Michael Rossell has been appointed Representative of the United Kingdom on the Council of ICAO, with effect from 19 September 2006.

Graduating with a bachelor of science degree (geology) from Edinburgh in 1978, Mr. Rossell worked as a mining and exploration geologist in South Africa for three years. After a short time in academia, he joined the U.K. Department of Transport in 1985, where he gained experience in a number of areas including the privatization of British Airways.

In 1994 Mr. Rossell was awarded the annual Humphrey Fulbright Fellowship to study at the University of Minnesota's Hubert H. Humphrey Institute of Public Affairs in Minneapolis, United States. He undertook an in-depth examination of the effects of the 1978 deregulation of the aviation industry in the United States, and considered the impact similar deregulation might have on the European industry.

Returning to the United Kingdom in 1995, Mr. Rossell headed up the international branch responsible for U.K. policy on aviation and the environment. He represented the United Kingdom in various working groups of the ICAO Committee on Aviation Environmental Protection (CAEP), and served as co-Rapporteur of a working group on market-based measures for reducing the environmental impact of aircraft engine emissions.

Most recently Mr. Rossell was the Transport Attaché at the U.K. Permanent Representation to the European Union (EU), and chaired the transport working groups during last year's U.K. Presidency of the EU. He brokered a European agreement on the legislative framework for Community action on unsafe aircraft and on new rights for passengers with reduced mobility travelling by air. He has also represented the United Kingdom in taking forward policy on a number of other aviation issues. □

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from engine emissions as aircraft are able to operate at more optimum levels. The creation of six more flight levels also increases overall airspace management and efficiency, leading to better on-time performance and fewer delays on major air traffic routes.

During 2005 ICAO was in the midst of updating its *Global Air Navigation Plan for CNS/ATM Systems* (Document 9750) in light of recent developments, in particular implementation-related initiatives by industry. A strategic action plan for future aviation safety, entitled the *Global Aviation Safety Roadmap*, was formally presented to the organization in December 2005 by an industry group led by the International Air Transport Association (IATA). Relevant material from the roadmap was incorporated into the revised Global Air Navigation Plan, which will be reviewed by the Air Navigation Commission in October 2006.

The revised Global Plan describes a strategy aimed at achieving near- and medium-term air traffic management (ATM) benefits on the basis of available and foreseen aircraft capabilities and ATM infrastructure. It contains guidance on the improvements necessary to support a uniform transition to the ATM system envisioned in the operational concept which was endorsed by the 11th Air Navigation Conference in 2003. The Global Plan and the operational concept have been integrated into the ICAO business plan and will serve as the cornerstones in meeting the organization's strategic objective of efficiency. The goal is to establish a more seamless, global ATM system.

The first meeting of the ICAO Operational Data Link Panel (OPLINKP), formerly known as the Automatic Dependent Surveillance Panel, was held in September. Experts from 12 States and three international organizations assessed ongoing data link trials and finalized material that will assist in implementation of air traffic services (ATS) data link applications. The panel concentrated on developing operational procedures to use automatic dependent surveillance–broadcast (ADS-B) as a means of satisfying existing ground surveillance (radar-like) requirements. The effort was in concert with the work of the Separation and Airspace Safety Panel (SASP), which carried out a comparative analysis of ADS-B and secondary surveillance radar (SSR). The work by SASP supports a horizontal separation minimum of five nautical miles based on radar and/or ADS-B. In parallel, the Surveillance and Conflict Resolution Systems Panel (SCRSP), recently renamed the Aeronautical Surveillance Panel (ASP), developed a new version of Mode S extended squitter messages in support of ADS-B. The new messages have more enhanced accuracy and integrity indicators and can support air-air applications as well.

The aviation community has been investigating ADS-B with the goal of providing a cost-effective replacement of current systems. This initiative constitutes a major contribution towards the development of ATM surveillance systems and provides timely support for the work of regional planning and implementation groups as well as States.

One development in support of the global navigation satellite system (GNSS) was Japan's launch of its first multifunctional transport satellite (MTSAT) for the purpose of providing aeronautical satellite communications, GNSS satellite-based augmentation system (SBAS) services and meteorological services to the civil aviation community in the Asia/Pacific regions (MTSAT-2 was launched in February 2006).

Amongst other SBAS developments, the European geostationary navigation overlay system (EGNOS) began its initial operations phase in July 2005; reference stations for the wide area augmentation system (WAAS) were installed in Canada and Mexico; and in the United States, over 200 WAAS-based approaches with vertical guidance procedures were implemented. During 2005 the Indian SBAS called GPS and geostationary augmented navigation (GAGAN) began its technology demonstration phase. In addition, development and prototype installation of GNSS ground-based augmentation system (GBAS) equipment was under way.

The first GPS replacement satellite joined the GPS constellation in September, and the first test satellite for the Galileo satellite navigation system was launched in December.

In Europe, where reform of air traffic management is a priority, a master plan for the future development of the European ATM network, namely the Single European Sky ATM Research (SESAR) Programme, was being developed with the objective of achieving interoperable convergence by 2012 and full interoperability by 2022. The programme's two-year definition phase commenced in 2005, with a 15- to 25-year development and implementation phase expected to commence in 2007. □

# IN THE SPOTLIGHT...

### SEMINAR ON PERFORMANCE-BASED NAVIGATION

An ICAO seminar on performance-based navigation (PBN) was held in Beijing in mid-May 2006. Open to participants from the Asia/Pacific region, the seminar included presentations on PBN implementation by Eurocontrol, the U.S. Federal Aviation Administration and leading regulators from the region, as well as by the aviation industry. The event was hosted by the General Administration of Civil Aviation of China (CAAC) and the Cooperative Development of Operational Safety and Continuing Airworthiness Programme — North Asia (COSCAP-NA). Recent articles in ICAO Journal have focused on the PBN implementation process (see "Performance-based navigation seen as key to global harmonization," Issue 3/2006, pp 5-7; and "Implementation of performance-based navigation making notable progress," Issue 3/2006, pp 9-12).

### PARIS MEETING

A meeting of the North Atlantic Systems Planning Group (NAT SPG) was held in Paris in mid-June. The oldest of ICAO's regional planning groups, the meeting of 13-16 June 2006 was the 42nd time that NAT SPG has convened. The group was established in 1965 to continuously study, monitor and evaluate the region's air navigation system in light of changing traffic characteristics, technological advances and updated traffic forecasts, and meets periodically to ensure that the North Atlantic Regional Air Navigation Plan can be adjusted on a timely basis.

### FAMILIARIZATION COURSE

ICAO held a two-week familiarization course in July 2006 for 33 participants and seven observers from 28 States. Conducted at ICAO's headquarters in Montreal, the course provided participants nominated by their national civil aviation administrations with insight into ICAO's role and various activities, and featured a series of lectures by ICAO officials as well as group discussions.


### FOCUS ON TRAVEL DOCUMENTS

A symposium and workshop on ICAO-standard machine readable travel documents (MRTDs), biometrics and security was held at ICAO headquarters from 6 to 8 September 2006, together with an exhibition on products and services related to MRTDs, biometric identification and border inspection systems. Shown at the opening of the three-day event are (seated, l-r): Mary McMunn, ICAO; Barry Kefauver, International Organization for Standardization (ISO); Jean-Michel Louboutin, Interpol; (standing, l-r): Joel Shaw, ISO; Jim Marriott, Transport Canada; and Gary McDonald, Passport Canada.

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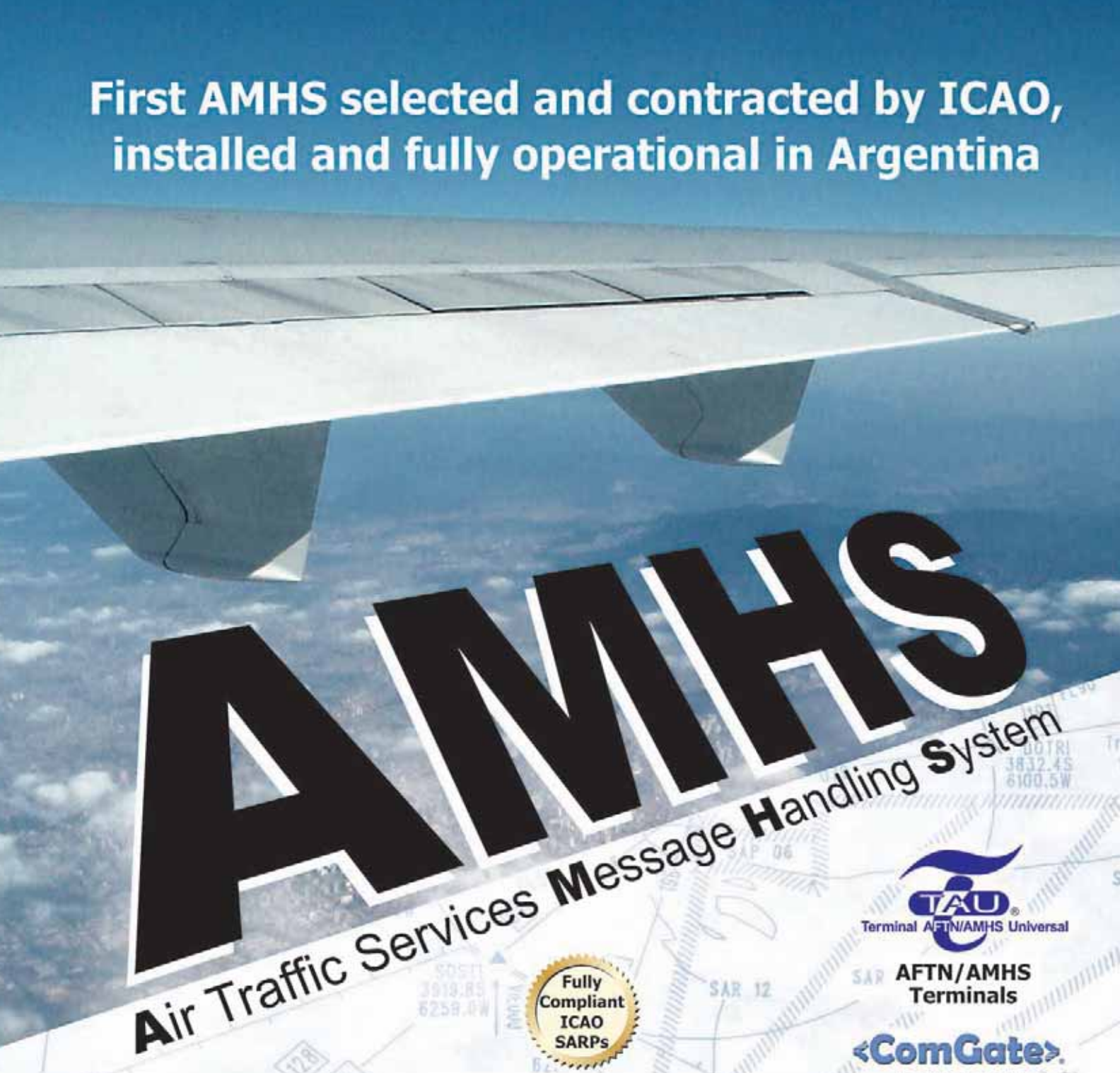

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Worldwide Technical Representative

SKYSOFT

**SKYSOFT ARGENTINA S.A.**
Conesa 999 (C1426AQS) - Buenos Aires, Argentina
Phone (54-11) 4555-1221 - Fax (54-11) 4555-5499
skysoft@radiocominc.com