

Orient aviation



WHAT PRICE WAR?

Conflict could put the Asia-Pacific airlines'
spectacular recovery into reverse

Australian inventor's
Wright connections

Asia-Pacific Fleet
Census UPDATE

Hong Kong 'heli' firms
face China challenge

SPECIAL REPORT: Safety in the Asia-Pacific region

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Orient Aviation and the Iraq War

At press time, the war in Iraq had started. Orient Aviation's cover story "What Price War?" has been updated where possible. Interviews were conducted before the conflict started. Other stories in the magazine were also written before the outbreak of fighting.

Orient aviation

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Long conflict could reverse Asia-Pacific airlines' spectacular recovery

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- Insurance: nervousness over war risk cover; ICAO accuses governments of apathy



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WAR LIFTS UNCERTAINTY

The questions have been answered, the waiting is over and the bombs are falling on Iraq. At least a decision has been made although, to say the least, it is one the airline industry could have done without.

But the constant uncertainty had reached a point where it was in danger of causing more damage than the war itself. The uncertainty was affecting stock market prices and un-nerving investors and business in general. This was reflected in the market gloom and by travel jitters.

In the past two years, according to the International Air Transport Association (IATA), airlines have stacked up some US\$31 billion in losses, more than their combined profits for the 100 years since the Wright Brothers first flew. By the end of 2003, several billion dollars more will likely be added to those losses.

Remarkably, in the midst of all this, Asia-Pacific airlines have remained in the black and even ordered new aircraft. They recovered speedily from the effects of 9/11, thanks to astute management and rapid reaction to market conditions. In recent times, many have announced healthy and, in some cases, record profits. Despite these facts, the director general of the Association of Asia Pacific Airlines (AAPA), Richard Stirland, pointed out that given current circumstances, many airlines in the region might be "on the verge of a situation where they could be suffering catastrophic losses within a very short space of time".

Our cover story on the impact of war with Iraq reports that airlines do not know the ultimate price they will pay for the

conflict. It depends on a list of imponderables: how long will the war last? How widespread will it be? Will it spawn more terror attacks? What will be the impact of the conflict on fuel prices and insurance costs? And what will be the extent of traffic losses and the rate of recovery after the war.

These "unknowns" make the airlines vulnerable because the biggest problems they face are ones that are almost totally outside their control!

They have no say over economic conditions, fuel and insurance costs, airport and air traffic control user fees or the straightjacket of regulation that prevents them operating like other multinational companies. They have no control over terrorist acts or wars in the Middle East. IATA reported additional security expenses for airlines since 9/11 have amounted to US\$4 billion worldwide.

There is no quick fix to these problems. No doubt carriers will have to cut costs again, rationalise, restructure, trim staff and find new business models that work in these uncertain times. There will be more pain and a strong possibility exists that some carriers may not survive. At least Asian airlines are better placed than their counterparts elsewhere to see this crisis through and emerge successfully at the other end.

We can only wait – and hope for a speedy end to the conflict.

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REGIONAL ROUND-UP

THAI SIGNS MOU FOR UNITED AIRLINES' B747-400S

Demonstrating a thriftiness that has no doubt disappointed Airbus and Boeing, Thai Airways International (THAI) is buying seven Boeing 747-400s from its struggling alliance partner, United Airlines (UA), for an estimated US\$330 million.

When THAI announced the deal, it said the planned purchase was for five airplanes built in 1998 and two manufactured in 1997. All the 347-seat aircraft are powered by Pratt & Whitney PW4000 engines.

The airline's chairman, Thanong Bidaya, said the Memorandum of Understanding (MoU) signed by THAI and UA for the purchase had to receive THAI Government approval, but he added the deal would be considerably cheaper than buying new aircraft – a comment clearly intended to sway any doubters in the Thai cabinet.

UA, now operating under Chapter 11 bankruptcy arrangements in the U.S., had 12 aircraft parked before the THAI deal developed. The aircraft purchase follows the announcement in February that the Bangkok-based carrier



Thai Airways International: has signed an MoU to buy seven B747-400s from United Airlines

– now planning a comprehensive expansion programme – intended to add its first dedicated freight carriers to its fleet this year.

THAI said it was looking at leasing two B747-200Fs, with a view to putting them into service by year end.

JAL WARNS OF PROFIT SHORTFALL

The JAL Group has downgraded its profit forecast by 67%, to eight billion yen (US\$68.4 million), for the fiscal year to March 31. The carrier said fewer bookings, caused by fears of a war with Iraq and weak economic factors contributed to the revised figure.

The JAL Group, created last year from the merger of

Japan Airlines and Japan Air System, also announced it would cut another 600 jobs at the merged carrier by 2006, in addition to the elimination of 3,000 jobs already announced last year, after the merger was unveiled.

EVA HEADS B777-200LR LIST

In March, Boeing announced it would re-start development of its B777-200LR (301 seat) aircraft – halted after 9/11 – following commitments to buy the airplane from Taiwan's EVA Air (3) and Pakistan International Airlines (2), in deals valued up to US\$1 billion. Boeing said the aircraft, on which about 10% of the development work had been completed by

9/11, had a maximum range of 17,000 kilometres. The first delivery to Asia – to EVA Air – was planned for early 2004. Boeing also has produced the B777-300RL, which is now going through flight testing, an aircraft that can carry up to 365 passengers.

CHINA AIRLINES FOR SALE AGAIN

Taiwan's national government has revealed it wants to resurrect plans to sell up to 30% of its national flag carrier, China Airlines (CAL). Government controlled China Aviation Development Foundation, which owns 71% of CAL, hopes to find buyers – both local and foreign – for the sale by June and has valued the shares to be offered at NT\$7.2 billion to NT\$10.82 billion (US\$207.7 million to US\$312.2 million). The foundation said it would sell a second tranche of CAL in 2004.

TRIBUNAL WINDS UP

At press time, counsel acting for Cathay Pacific Airways and Hong Kong Dragon Airlines (Dragonair) were preparing their closing arguments for the hearing into Cathay Pacific's application to resume flying

PEOPLE

Isao Kaneko, until April 1 the president of Japan Airlines (JAL) and chief executive of Japan Airlines System Corporation (the JAL Group Holding Company) is now chief executive of the JAL Group and chairman of Japan Airlines. Katsuo Haneda, the airline's former executive vice-president, will succeed him at JAL as president. The new president of Japan Air System is Minoru Morikawa, who has taken over from Hiromi Funabiki.

Rolls-Royce, a global engine manufacturer with a track record of more

than four decades of marketing, sales and educational investment in China, has named former British diplomat and Hong Kong political adviser, Richard Margolis, as its new China country director. Margolis, who served in Beijing and Paris before he became Hong Kong's deputy political adviser in 1981, switched to the private sector in 1986, when he joined securities house, Smith New Court, a firm bought by Merrill Lynch in 1995. Margolis left Merrill Lynch at the end of 2001, but remained as a consultant to the bank until his ap-

pointment to Rolls-Royce in March.

John Albrecht, formerly director new business ventures for Boeing Commercial Airplanes, is the new vice-president, sales and business development for the aircraft training company, Flight-SafetyBoeing Training (soon to be renamed Alteon). A lawyer by training, Albrecht has been at Boeing for five years working on the establishment of a number of businesses for the manufacturer under the company umbrella of Boeing's Commercial Aviation Services. ■

to Beijing, Shanghai and Xiamen after a 13-year hiatus. The hearing, before the **Air Transport Licensing Authority (Atla)** in Hong Kong, has heard Dragonair argue that granting approval to its fellow Hong Kong carrier to fly the three Hong Kong-China routes – now exclusively serviced by Dragonair out of Hong Kong – would produce “financial devastation” for Dragonair. Cathay Pacific submitted to Atla it is entitled to expand its services to the three cities in its immediate territory of China, just as it had developed route networks to other countries in the region.

AUSTRALIAN AIRLINES TO FLY TO SHANGHAI

Qantas Airways subsidiary, **Australian Airlines**, launched last year and targeted at regional international holidaymakers, plans to start direct Cairns-Shanghai flights next October, following the delivery of two Boeing 767-300 aircraft. The airline, which operates four B767-300s, said it will add services to Bali in July and may increase its three times a week flights from its base city of Cairns, in Queensland, to Hong Kong. A decision on expanding the service will be made by June, a company spokeswoman said.

BRIEFLY

AIRPORTS . . . In Australia, **Macquarie Airports**, operators of **Sydney International Airport**, reported a net profit of A\$48.1 million (US\$29.4 mil-

lion) for the year to December 31, 2002, but said a war with Iraq would curb its growth in 2003. Japanese construction company, **Shimizu Corp.**, has won the contract, valued at US\$576.5 million, to build Singapore’s third international airline terminal, a facility planned to open in 2006 and cater for an additional 20 million passengers a year at **Changi International Airport**. Mainland Chinese media reported in February that the **Civil Aviation Administration of China (CAAC)** has required **Xiamen Airlines** to take over **Changle Airport** in Fuzhou, a terminal complex that has lost three billion yuan (US\$360.25 million) since it opened in 1997. Changle was built to serve direct flights – yet to happen – between China and Taiwan. The second tier carrier was set to assume control of the airport and its 1.6 billion yuan debt in March. At the same time, 400 million yuan will be invested in the venture to set up the new airport company.

CARGO . . . **Hong Kong Air Cargo Terminals (HACTL)** reported a cargo increase of 4.7% in February over the same month in 2002, and added aggregate tonnage volume for the first two months of the year had increased by 10.5% compared to the same months last year.

CODE-SHARES . . . Guangzhou-based **China Southern Airlines (CSA)** and **Japan Airlines** will operate code-share services between Guangzhou and Tokyo from March 30 for six months. Until

Leahy hits optimistic note on post war recovery

Airbus Industrie executive vice-president customer affairs, **John Leahy**, has won the reputation of being an eternal optimist. How else can one describe a man who has continued to buck the trend and predict major recoveries after the Asian economic crisis of 1997-98 and 9/11? Now he is forecasting the same when the war in Iraq is over.

“Aviation is so intertwined into world economic growth that unless you want to predict another 1930s-type depression, you must have aerospace, you must have airline traffic growth and you must have new aircraft to replace old aircraft,” he told the Hong Kong-based **Aerospace Forum Asia** in March.

Dismissing the doom and gloom merchants, Leahy said air traffic routinely bounced back after any crisis and would continue to grow.

Quoting Airbus’ new global market forecast, Leahy projected that revenue passenger kilometres (RPK) would in-

crease in the next 20 years by two and a half times. The number of new passenger aircraft delivered would average about 760 a year and freighters would more than double. “We are clearly below that trend line right now, which is typical in a bit of a downturn and we will pop above the trend line as we come out of this in the 2004 – 2005 time period,” said Leahy.

He reported that the biggest market was the domestic North American market with about 26% of all RPKs. Asia stands at 14%. However, in 20 years Asia will be in the top spot with 18.4% from the intra-Asia market alone. “The real story is that the biggest market is going to be Asia,” said Leahy.

He added that although aircraft deliveries have dropped from 900 in 1999 to about 585 expected this year, “over this 5-year period our deliveries have been hovering at around 300 aircraft a year – and that’s through thick and thin, through depressions, post 9/11 etc”. ■

the new agreement began, CSA and **Japan Air System (JAS)** had flown code-share services between the two cities. Last year, JAS and Japan Airlines merged into one group, to become the **Japan Airlines Group**. Earlier in March, CSA announced it would expand its code-share with domestic Chinese carrier, **Shandong Airlines**, on services to several southern Chinese cities as well as Shanghai and Beijing. The two airlines launched their code-share services in 2001.

ENGINES . . . China Southern Airlines (CSA) has made a US\$35 million order for 23 Performance Improvement Programme upgrade kits for its GE90 engines, that power CSA's B777 aircraft. The kits, to be installed between 2003 and 2005, will increase the engines' thrust from 85,000-90,000 lbs. to 94,000 lbs.

FLEET . . . Low-cost carrier, **AirAsia**, announced in March it intended to increase its fleet of 737-300s to 21 during the next three years. The Malaysian domestic airline, which aims to fly regional routes, has six 737-300s in service and is awaiting delivery of another, which will be taken on lease. **Air Paradise**, a new operator between Bali, Indonesia and Australia, will add a second aircraft to its fleet – another A310 – in April.



Australian Airlines: more aircraft, more routes

China's aviation authorities are reported to have approved **Shenzhen Airlines'** request to acquire 10 Boeing next generation 737-900 aircraft up to 2006. The southern China carrier has a fleet of 18 aircraft and intends to increase that figure to 30 within two years, said the *South China Morning Post* in Hong Kong. **Singapore Airlines (SIA)** has asked both Boeing and Airbus to present their proposals for purchase by SIA of aircraft to replace the carrier's A310 airplanes and some older B747-400s.

MROs . . . The Hong Kong Aircraft Engineering Company (HAECO), controlled by the **Swire Group** and **Cathay Pacific Airways**, said in March its profit for the year to December 31, 2002 surged by 49% to HK\$465 million (US\$59.6 million) as a result of improved

sales and reduced operating costs. **SR Technics**, based in Zurich, has expanded its agreement with **Hong Kong Dragon Airlines (Dragonair)** to include full responsibility for the technical management of the carrier's A320/A321 fleet. The parties signed a three-year agreement in March, which included an option to extend the contract for two years. Dragonair has four A321 and eight A320 aircraft in its fleet and is scheduled to take delivery of two A321s in mid-2003.

ROUTES . . . Cathay Pacific Airways and its oneworld alliance partner, **British Airways (BA)**, have extended their code-share partnership, introduced three years ago, to include Cathay's designation on BA services from London to Copenhagen and Lisbon as well as the placing of the British carrier's code

on Cathay flights from Hong Kong to Seoul. Cambodia's **Mekong Airlines** launched its three times a week service between Phnom Penh and Hong Kong in March. Shenyang-based **China Northern** will increase its services to Japan by adding five routes to its China-Japan network. **SWISS** announced in March it would take 20 aircraft out of its fleet and retrench 700 cockpit, cabin and ground staff, because of a sharp decline in business on several European routes. But the carrier also has signed code-shares with **Japan Airlines** and **Qantas Airways**, on the Zurich-Tokyo and Zurich-Sydney (via Frankfurt and Singapore) routes respectively. The JAL agreement began on April 1 and the Zurich-Sydney flights will start with the introduction of SWISS's summer schedule.

TRAINING . . . Gulf airline operator, **Oman Air**, has signed up with new joint venture simulator operators, **Emirates-CAE Flight Training** in Dubai, to train its pilots on the company's Boeing 737 Next Generation/BBJ Full Flight Simulator (FFS). The centre, opened in February, has two Level D FFS and an Airbus A319/320/ACJ simulator and will move into a new 14-bay complex at Dubai International Airport by mid-year. ■

Air Hong Kong's recovery complete

Cargo carrier **Air Hong Kong's (AHK)** transformation from a loss-maker to a successful business continued in March when it signed a purchase agreement for six new A300-600F "general freighters", with options for four more aircraft.

The carrier, 60% owned by **Cathay Pacific Airways'** wholly-owned subsidiary, **Maplebeck Ltd**, and 40% controlled by **DHL Worldwide Express**, will start taking delivery of the freighters in the second half of 2004.

AHK will be the launch

customer for the aircraft type, which differs from other A300-600 freighters in that its loading system and side door are capable of handling large items of freight as well as small packages.

This latest AHK development completed the carrier's comeback from the brink of bankruptcy in the 1990s.

At one stage, when owned by Macau casino magnate, **Stanley Ho**, **China Southern Airlines** made a bid for the airline, but at the eleventh hour Cathay Pacific stepped in and took a 75% stake in the

carrier. Ho retained 25% of the equity.

AHK has played a low-key role within the Cathay Pacific group for a number of years, serving the Middle East and Europe with three B747s, after Cathay management quickly turned the carrier into an efficient and profitable operation. Last July, Cathay took over AHK's long-haul routes to Brussels, Manchester and Dubai. AHK currently has one B747 operating to Seoul and Osaka.

AHK became wholly owned by Cathay 14 months

ago. Later in 2002, as plans were made for its new regional role, DHL took a 30% stake in the airline and acquired an additional 10% in March.

AHK chairman, **Tony Tyler**, said the airline would build up its pilot numbers to about 50. Airbus executive vice-president customer affairs, **John Leahy**, said the manufacturer was assisting AHK in the design of a new livery, which would be launched in time for the arrival in Hong Kong of the A300-600F general freighters. ■

BUSINESS ROUND-UP

CATHAY PACIFIC PROFIT RISES SIX-FOLD OVER 2001

Cathay Pacific Airways announced a six-fold increase in net profit to HK\$3.98 billion (US\$515.5 million) for the year ended December 31, compared to a HK\$657 million profit in 2001.

Strong passenger and cargo traffic growth together with aggressive cost-cutting measures were the reasons for the major improvement, said the Hong Kong-based carrier.

However, Cathay Pacific chairman, **James Hughes-Hallett**, warned the outlook for 2003 was "somewhat clouded by the current political and economic uncertainties". The fuel price was rising and there was the risk of war in the Middle East, he said. "It may well be difficult to repeat the performance of 2002 in 2003," he added.

Cathay Pacific reported a record passenger load factor of 77.8% last year, up 6.5% from 2001. Hughes-Hallett said traffic had recovered quicker than expected. First and business class demand, however, remained weak and contributed to a 0.7% fall in passenger yield to HK45.4 cents.

Cargo maintained its uninterrupted growth in 2002. Cargo and mail load factor was 71.2%, a rise of 3.9% over 2001, but yield was down 2.7% to HK\$1.80 per tonne kilometre. Freight accounted for 28.4% of the group's annual turnover.

Company-wide turnover increased 8.7% in 2002 to HK\$33.09 billion. Passenger turnover increased 8.7% to HK\$22.38 billion and cargo turnover rose 12.5%, to HK\$9.39 billion.

Operating expenses were trimmed by more than 4% to HK\$28.34 billion. Fuel costs fell 7.9% to HK\$4.9 billion. Landing, parking and route expenses declined 9.1% to



CARGO LEADS WAY FOR MAS REVIVAL

Malaysia Airlines (MAS) is continuing its revival with cargo, in particular, gaining momentum. MAS announced an operating profit of RM32.3 million (US\$8.4 million) for the third quarter ended December 31, compared to a loss of RM323.8 million in the same quarter in 2001.

The result was a significant improvement, too, on the second quarter profit of RM8.9 million.

Profit before tax for the quarter was RM333.6 million, compared to a loss of RM324.9 million a year earlier and a profit of RM5 million in the previous quarter.

MAS filled more capacity, added flights and sold aircraft in the quarter. Passenger traffic rose 16.7% year-on-year for the quarter to 9.37 billion passengers kilometres, on a capacity increase of 4.9%. Cargo traffic rose 26.5% for the same period to 587 million load tonne kilometres, with a capacity increase of 2%. Passenger load factor averaged 66.9%, an increase of 6.7 percentage points, while the airline's cargo load factor rose to 72.5% for the quarter, up 14.2 percentage points.

Cargo has improved in each quarter of the year, but the third quarter surpassed the cumulative figures for the first two quarters, which was beyond expectations. "This was due to closer monitoring of cargo demand and the ability to exploit transshipment potential, which grew by 42% during the first nine months," said the airline. ■

HK\$4.65 billion.

QANTAS ACTS FAST AS WAR JITTERS SET IN

In late February it was a case of good news and bad news for **Qantas Airways**. The Australian national carrier announced a record after-tax profit of A\$352.5 million (US\$209.5 million) for the six months ended December 31, which was more than double the interim result of A\$153.5 million a year earlier. The figure also beat analysts' expectations.

But chief executive **Geoff Dixon** said war jitters were having a significant effect on

bookings, particularly on the lucrative "Kangaroo" route to Britain, and to Europe and Japan.

Dixon said declining forward bookings in these markets up to June 30 had prompted Qantas to reduce domestic and international operations from March. Also, the airline would cut costs by forcing staff to take accumulated annual and long service leave up to mid-year, which would reduce staffing by the equivalent of 1,500 full-time jobs.

Assuming there was no further deterioration in demand, Qantas would remain on track to achieve its full-

year profit target. Dixon said passenger volume could drop by 15-20% if there was a war in Iraq.

International operations contributed most to the interim profit, with earnings before interest and tax (EBIT) of A\$263.9 million, compared with an EBIT loss of A\$15.5 million for the same period in 2001.

AIRNZ MOVES INTO THE BLACK

Air New Zealand's (AirNZ) new management has turned around the fortunes of the carrier ahead of time. The carrier announced a net after-tax profit of NZ\$93.9 million (US\$53.1 million) for the six months to December 31. For the same period in 2001, AirNZ lost NZ\$376 million, which included a NZ\$350 million charge linked to the closure of its subsidiary, **Ansett Australia**.

The New Zealand Government became an 82% shareholder in the airline in 2001 when it invested NZ\$885 million to keep AirNZ flying after the collapse of Ansett.

A year ago, AirNZ's then new chief executive, **Ralph Norris**, said management expected the airline to return to profitability within 24 months "preferably sooner rather than later".

AirNZ has said it expects to meet its full-year profit forecast of NZ\$230 million despite the fact that bookings from Japan and the U.S. in March were 10% lower than a year earlier due to fears of war in the Middle East.

Chairman **John Palmer** attributed the carrier's success to strong passenger growth, a NZ\$61 million fall in fuel costs and a 14% appreciation in the New Zealand currency against the US\$.

However, the future success of AirNZ depended on its proposed alliance with **Qantas Airways**, said the airline. The competition authorities in

New Zealand and Australia will announce by mid-year if they will allow the purchase of 22.5% of AirNZ by Qantas.

Revenue for AirNZ in the first six months of the current year rose 2% to NZ\$1.84 billion. Costs were down 8% to NZ\$1.43 billion.

AirNZ flew 4.72 million passengers in the period, up 2.4% on 2001. Passenger load factor climbed from 69.3% to 76.2%.

ANA ALMOST DOUBLES 2002 LOSS FORECAST

All Nippon Airways (ANA) began a three-year cost-cutting programme in April that will eliminate 1,200 jobs and cut retirement and pension benefits by about 10%.

In late February, ANA announced it expected a net loss for the year ended March 31 of 35 billion yen (US\$296.9 million), a figure that was almost double the previous forecast, made in November, of 18 billion yen on consolidated revenue of 1.23 billion yen. The airline said it expected to report an operating loss of four billion yen, which reversed an earlier forecast of an operating income of 15 billion yen.

The airline blamed declining domestic revenue, caused by severe airfare competition and the cost of increased sales promotions to try and win back passengers, for the higher-than-expected losses.

The staff and benefit reductions, said executive vice-president, **Yasushi Morohashi**, should save ANA 30 billion yen in annual operating expenses in the next three years.

CSA PROFIT RISES 69%

The net profit of China's largest carrier, **China Southern Airlines (CSA)**, rose 69.2% in the year to December 31 to 575.76 million yuan (US\$69.1 million). Analysts attributed CSA's strong performance to the growth of tourism and freight traffic on the Mainland.

Turnover climbed 9% to 18.01 billion yuan, while operating profit increased 22% to 2.06 billion yuan.

Meanwhile, **Hainan Airlines** has said it is expecting to post a 50% growth in profit for 2002, based on higher revenue from its core operations. In the first six months of 2002, Hainan recorded a net profit of 56.8 million yuan.

MAS BOND ISSUE

Malaysia Airlines (MAS) parent, state-owned **Panerbangan Malaysia Bhd**, is planning a large global bond issue in the next six months to refinance part of the carrier's seven billion ringgit (US\$1.84 billion) debt. Panerbangan Malaysia was established by the Malaysian Government last year to financially restructure MAS. It has a 69% equity interest in the airline. ■



WHAT PRICE WAR?

At press time there was war in Iraq. What will be the effect of the conflict for the airlines of the Asia-Pacific? Although they have responded rapidly to the situation, the answer to that question depends on a series of unknowns. What is known is that a drawn out conflict will send the region's recent spectacular recovery into reverse. **TOM BALLANTYNE** reports

As the bombs started falling on Iraq, Asia-Pacific airlines were steeling themselves for severe market turbulence, potentially serious damage to financial reserves and disruption to network operations. Collectively, they foresaw a serious plunge in passenger numbers and feared critical challenges in two other key areas; fuel costs and war risk insurance.

A survey conducted by *Orient Aviation* in the build up to the start of fighting on March 20 revealed few carriers in the region have any real idea of the ultimate cost of this war because its bottom line impact will hinge on a series of unknowns, including:

- **How long will the Iraq conflict last:** a short war may lead to rapid recovery, but if the conflict drags on, or if it sparks terrorist attacks elsewhere, the industry will be thrown back into depression.
- **Oil prices:** already fuel costs have hit historic highs in recent weeks, but experts differ on whether prices will rise or fall.
- **Insurance:** if cover is suspended, as happened after 9/11, airlines could face groundings.
- **Traffic downturn:** will it occur on limited routes or be more widespread?
"It is all in the hands of the Devil and

George Bush," said Association of Asia Pacific Airlines (AAPA) director general Richard Stirland in the run-up to hostilities. "The fuel price is already going through the roof and if there is a war then it will go absolutely stratospheric. So there is definitely serious cost impact. Although bookings and load factors during January, February and early March have been very healthy, there has been a definite drop off in bookings beyond the middle of March.

"If the war is confined to two or three weeks there will not be a need to reduce much capacity. If the thing drags on and there are one or two terrorist attacks anywhere in the world, it's just anybody's guess."

Qantas Airways chief executive, Geoff Dixon, predicted airline failures and industry consolidation. "This industry is in chaos, hundreds of thousands of people are being put off [travelling] and planes are being put against the wall. Some U.S. airlines are in bankruptcy, there's great trouble in Europe. It is a difficult situation everywhere," he said.

Dixon added if there was a war in Iraq, airline failures and consolidation would be inevitable in an industry that employs large numbers of people and has high capital costs.

But there is good news on one front. The International Air Transport Association (IATA) said alternative air routes

around Iraq are in place and there should be minimal impact on commercial flights for most airlines during the conflict (see separate story).

Operating normal services, however, will not help keep the industry afloat if passengers stay at home. Carriers believed traffic patterns will be similar to those of the 1991 Gulf War: a decline of 15% to 20% worldwide. In some cases, such as the sensitive Japanese market, the fall-off was up to 30% in 1991.

Airline executives refused to speculate on potential losses for their carriers, but the prospects look grim. While airlines worldwide lost US\$30 billion in the last two years, Asian carriers have bucked this trend.

Yet Stirland said although published results of the region's airlines show excellent returns for the past 12 months, many may be "on the verge of a situation where they could be suffering catastrophic losses within a very short space of time".

A lot of the post-9/11 recovery had been built on a vigorous freight market. "If this war leads to an economic downturn even that freight won't be there to underpin the results," said Stirland.

Not all the forecasts are gloomy. ING Financial Markets has upgraded its outlook on the Asian aviation sector, predicting the outbreak of hostilities in Iraq will trigger a "relief rally", which will particularly benefit airline stocks.

ING aviation analyst, Philip Wickham, based in Hong Kong, said he expected any conflict would be brief. "A swift and successful second Gulf War will take away what we see as a US\$5-US\$7 per barrel premium that is currently built into the crude oil price. As a consequence, jet fuel prices will fall, leading to a substantial rise in cash flows and earnings for Asian carriers in 2003."

From the airlines' perspective, confidence remained shaky. "Clearly, any war will be bad for travel and the affect on oil prices extremely uncertain. Ask two oil companies and one will tell you the price will go up and the other will say it might go down. We really have no idea which way the oil price will go, but we can be sure a war will deter people from travelling," said Cathay Pacific Airways chief executive David Turnbull.

K.W. Nieh, senior vice-president of Taiwan's EVA Air expected war to discourage international travel for American and European passengers and impact on long-haul flight revenue.

Nobutaka Ishikure, executive officer industry affairs at Japan Airlines, predicted international passengers would react as they did during the first Gulf War. "At that time, traffic slumped 30% and crept back to normal after four to five months. Our guess this time, based on the 9/11 experience, is traffic within Asia and on China routes would likely hold up, but we would see a decline in Japan-Europe and Japan-U.S. traffic. We would also expect an increase in domestic air travel, as an alternative to overseas travel."

Indonesia's Garuda Indonesia will move its Indonesia-Europe routes from southern Asia to northern Asia at the outbreak of war, said director of commerce, Bahrul Hakim.

Many carriers already have taken steps to offset a downturn in long-haul intercontinental traffic. Malaysia Airlines (MAS) has added flights to destinations within Asia, Asean countries and the Indian sub-continent as part of its summer schedule from March 31.

MAS managing director, Datuk Md Nor Yusof, told analysts recently: "Our continued focus on deploying capacity within the Asian region may partially cushion any adverse impact [of a war]." Flights into Europe would be re-routed through Saudi Arabia or Afghanistan in the event of war, said MAS.

Air New Zealand (AirNZ), which operates to Europe through the U.S., is monitoring the situation closely. Said Air NZ chairman, John Palmer: "There is no doubt the uncertain world stage will negatively impact our business. Passenger numbers, yields and fuel prices will all likely be effected."

Qantas' Dixon said solid recovery in international markets and domestic



Qantas Airways chief executive, Geoff Dixon: airline failures and consolidation inevitable



Malaysia Airlines managing director, Md Nor Yusof: deploying extra capacity in Asia could cushion impact of war

growth at the carrier is under pressure from heightened tension surrounding Iraq and the threat of terrorism. "Forward bookings for the next 18 weeks have slowed considerably in some markets, including Japan, Europe and the United Kingdom. All carriers appear to be effected. Our general scenario is that if there is a war of any length, the drop off in traffic would be 15% to 20%."

Qantas reduced flights on domestic and international services from March, has enforced the use of accumulated annual and long service leave to reduce staff by the equivalent of 1,500 employees and has imposed a freeze on discretionary spending at the carrier.

Stirland did not believe any rise in travel within Asia would wholly compensate for declines elsewhere. AAPA airlines were particularly concerned that transpacific routes to North America may be hit harder than those to Europe.

"I think the fear is that because the

Japanese predominate on routes between Asia and the U.S., they are going to be the first to stop travelling. Secondly, there is a fear a lot of other people are just going to avoid the U.S. altogether," said Stirland.

That view is echoed by Philippine Airlines vice-president corporate communications, Rolando Estabilio, who said it was hoped the war would only effect traffic to and from the Middle East. "However, we are concerned that the fragile state of some of the world's biggest economies, like Japan and Germany, will magnify its impact and effect the rest of the world."

Asia-Pacific carriers re-act quickly to war

Asia-Pacific airlines reacted promptly as the war started in Iraq, announcing plans to cancel or re-route flights as soon as the conflict began on March 20. Singapore Airlines (SIA) suspended 65 weekly services from March 31 as a result of falling demand. Flights to Brussels, Madrid, Las Vegas, Chicago and Mauritius were halted with frequency reductions to 18 destinations worldwide. SIA implemented several alternative flight paths to ensure services to the Middle East, Europe and transatlantic services, via Europe, could continue.

Korean Air cut 29 flights to the U.S. and Europe. Thai Airways also intended to cancel its Middle East services and re-route flights to Europe. It operates to five Gulf destinations: Abu Dhabi, Dubai, Bahrain, Kuwait and Muscat.

Malaysia Airlines said it aimed to continue operations to the Middle East and Europe "as normal", using four "safe" routes established by ICAO. However, the carrier said it will be closely monitoring the situation.

Cathay Pacific said all flights between Hong Kong and Europe are following routes over China and Russia, well away from the Gulf region.

It had no immediate plans to suspend services to Bahrain, Dubai and Riyadh.

Garuda Indonesia moved its European flights to more northerly air routes, prolonging flying time from around 13 to 17 hours.

Japan Airlines (JAL), which saw traffic demand fall 20% in the first half of March, reduced services to Paris and Indonesia. JAL has no flights to the Middle East. It established an Iraq Situation Emergency Handling Team in Tokyo to monitor events. The team included flight operations specialists, airport and facilities experts, passenger traffic specialists and planners.

Air India and Indian Airlines cancelled all flights touching Kuwait, Saudi Arabia and Bahrain.

See also new routes and contingency plans on page 16. ■

FUEL: Timing of hedging 'critical'

A number of Asian carriers have hedged percentages of their fuel supplies until the end of the year or longer. According to data available, Singapore Airlines (SIA) and EVA Air have hedged 50% of their fuel, Cathay Pacific and Dragonair 45%, China Airlines (CAL) 40%, Korean Air and MAS about 30% and Thai Airways International (THAI) 10%. In Mainland China, China Eastern Airlines and China Southern Airlines have about 5% of their fuel hedged to the end of the year.

The big decision the airlines have to make is when to arrange new deals for hedging contracts that will run out earlier, some within weeks.

EVA senior vice-president K. W. Nieh, explained: "Fuel prices recently went sky high when the Middle East conflict began to heat up and high fuel costs are hurting economic recovery. Because of this, we expect fuel prices will level out as

soon as the situation in the Middle East calms down. We are focusing more on the timing of hedging fuel prices, which we believe to be critical. EVA has hedged more than 50% of its fuel consumption for the first quarter [of the fiscal year]. We believe hedging reduces the risks of floating fuel prices."

Jet fuel prices are above US\$365 a tonne, compared to US\$190 a year ago. Any airline that hedges its fuel in the near future may become locked into a higher price than when fuel prices drop after the war. Every one U.S. cent rise in the price of a gallon of jet fuel is estimated to cost airlines US\$600 million a year globally. For a carrier like MAS – fuel is 20% of annual costs – every U.S. cent rise translates into US\$5.2 million in increased annual fuel costs.

SIA, which hedges its fuel needs on a 24-month rolling basis, said a one U.S. cent rise in the price of a gallon of fuel will increase the carrier's annual fuel cost for

passenger operations by about US\$11.6 million (S\$19 million).

CAL signed its fuel hedging contract earlier this year and will be strongly hedged until the first half of 2004.

Asiana chairman, Sam Koo Park, said simply: "The cost of fuel is the problem. We have some fears. We can manage it right now."

Chinese international airlines have a different dilemma. They are accustomed to paying higher prices for fuel than their regional competitors because of the existence of a Mainland jet fuel monopoly. This system means prices within the country are 40% to 50% higher than elsewhere in Asia at the present time.

American carriers have called on their government to use the nation's Strategic Petroleum Reserve (SPR) to moderate the impact that high fuel costs are having on the economy, but Asian airlines are unlikely to have access to such government level assistance. ■

INSURANCE: Nervousness over war risk cover

There are genuine fears among airlines about the decisions insurers will make now there is a war with Iraq. After 9/11, they gave airlines seven days notice of cancellation of all terrorist and war risk cover. Several underwriters have indicated to brokers they will review geographical limits on insurance cover for operations in, to or from Iran, Iraq, Israel, Jordan, Kuwait, Oman, Saudi Arabia, Syria, Turkey, United Arab Emirates and Yemen.

"If there is a terrorist attack somewhere else in the world they may say there is no difference between the Middle East and South America, or London and New Jersey. They may say we can't cover anywhere. They do have the power to withdraw the cover," said AAPA director general Richard Stirland.

He pointed out circumstances were significantly different today compared to the pre-9/11 era. Now, all U.S. carriers are covered under a Federal Aviation Administration (FAA) insurance programme and are not involved in commercial arrangements.

Insurers also are in an improved financial position. In 2000, they charged airlines US\$1.1 billion in premiums and incurred losses of US\$2.2 billion – a deficit of US\$1.1 billion. In 2001, because of 9/11



AAPA director general Richard Stirland: circumstances different to pre-9/11 era

surcharges, premiums rose to US\$3.6 billion and insurers incurred losses of US\$5.3 billion – a deficit of US\$1.7 billion. The situation improved dramatically last year with premiums paid of US\$3.2 billion against losses of US\$900 million, thus producing a record profit of US\$2.3 billion for the airline insurers.

The majority of the insurance market has indicated it will respond in a meas-

ured way to the war and, at least at the outset, limit action to the immediate geographical area of the conflict.

One concern is that the International Civil Aviation Organisation (ICAO) has not finalised its global war risk insurance scheme, Globaltime. It needs the backing of states which represent 51% of the organisation's funding. At press time, support had reached 46.65%. The U.S. will not take part in the scheme because its carriers are covered by the government's assistance programme. ICAO needs the nod from Japan, which contributes 14.36% of total funds to the organisation's coffers, to be sure of achieving the 51% target.

Howard Goldberg, IATA's director taxation and insurance, said available third party war risk liability coverage in the commercial market reflects almost all of what is included in ICAO's Globaltime scheme.

"The only thing missing from IATA's perspective is the role of government. We continue to believe that governments should play a role with respect to war risk insurance for airlines," said Goldberg.

In 2002 Singapore Airlines' war risk and third party insurance costs rose from about US\$12.5 million to US\$80 million. ■

By Tom Ballantyne

The International Air Transport Association (IATA) says the war in Iraq will have minimum impact on air traffic flows along the critical Asia-Europe route corridor. But some Asian airlines expect significant cost impact from re-routing elsewhere.

IATA's Singapore-based regional director for safety, operations and infrastructure, David Behrens, told *Orient Aviation* that new air routes opened between Asia and Europe late last year, along with contingency plans to counter-act expected airspace restrictions around the Middle East, should make it "business as usual" given there is no unexpected widening of the war zone.

"We have states, the United Arab Emirates and Iran being primary ones, that have made very firm commitments [to keep their air space open]. If they live up to these commitments we have in place today it would not make much difference to Asia - Europe operations.

"From an Asia-Pacific perspective it looks very good. Do not expect any congestion in Singapore and for the greater part, for these long-haul traffic flows, it will be business as usual.

"Even for airlines flying from Malaysia to Dubai, Sharjah, or even Bahrain, there is a good network of routes that would allow carriers to stay away from any action over the Persian Gulf area," said Behrens.

However, the effects will vary considerably from carrier to carrier. K.W. Nieh, senior vice-president of Taiwan's EVA Air, said the Middle East conflict would mean re-routing most of its European flights to the south of the trouble zone. "If, for example, we use the Group Five route proposed by IATA, our costs will increase by approximately NT\$10 million (US\$286,000) per week," he said.

A spokesman for Taiwan's largest carrier, China Airlines said: "We will move our European routes southward. If the whole region became affected, we may consider flying over Russia. A flight that has to be re-routed will incur extra costs on fuel, crew, overflight charges and other aspects of our operations."

Thai Airways International (THAI) vice-president alliances, Wallop Bhukkanasut, said as war loomed: "It's a very difficult time. THAI may be among those hardest hit because it operates services to five Persian Gulf states. We would have to look closely at possible suspension of services to all of them. It's better for consumers to stay away from the war zone to be sure it's safe."

Behrens agreed the real threat to route viability would come from either higher fuel prices or a drop in traffic as nervous travellers opt to stay at home.

New routes and contingency plans in place



EVA Air: re-routing could cost the carrier an extra US\$286,000 a week

Nevertheless, Behrens said IATA was acutely aware that the actual war scenario is unpredictable and airlines must be prepared for unexpected developments. Efforts made to cater for air transport needs during the conflict have been intense. IATA is operating a 24-hour, seven-day a week "clearing house" in Montreal to act as a conduit for information between all parties involved.

"Anything that happens is going to explode almost at the speed of light. Planes already airborne need to know immediately if an airport or airspace is suddenly closed. There is a necessity to spread this information as far and wide and as immediately as possible," said Behrens.

Lines of communication are in place between coalition military forces in Iraq, the headquarters of IATA and the International Civil Aviation Organisation (ICAO). "We don't want anything to happen to civil aviation, full stop. We can't afford it as an industry and the coalition forces want the impact to be as minimal as possible," he said.

Contingency planning to cope with potential disruptions has been assisted by experience the industry gained from preparing for Y2K. Also, re-routing of flights was required during the fighting in Afghanistan that followed the 9/11 terrorist attacks in the U.S.

Behrens said problems could arise if airlines had to be diverted to the north through China and Russia. "That is a

whole different scenario. Then you would be talking about Iran being closed. But even if that happened there are enough routes available through Afghanistan and over the Caspian Sea to divert aircraft.

"If Afghanistan was closed, then you would have real problems. There is no way round this because of the Himalayas. All of a sudden you are adding several hours to your flight time and there would be a bottleneck," said Behrens.

This is now unlikely. Afghanistan airspace may once have presented a problem, but this is now firmly under control. A key area between Asia and Europe, coalition forces operating in the country have provided several additional air routes for use by air traffic.

North Asian carriers, such as those from China, Japan, Korea and Hong Kong, already operate flights along northerly routes and should not be effected at all unless they have services into the Middle East.

Most Asian airlines operating to Europe through Southeast Asia hubs at Singapore, Bangkok and Kuala Lumpur will continue to use the new Europe, Middle East, Asia Route Structure South of the Himalayas (EMARSSH), which was opened on November 28 and offers five new routes each way.

However, even Qantas Airways, which operates through Singapore and Bangkok, has several flights that fly to Europe north of the Himalayas. ■

An International Civil Aviation Organisation (ICAO) Working Group set up to discuss new conventions on liability for damage caused by aircraft resulting from terrorist attacks has exposed a high level of "apathy" among the world's governments, according to a leading aviation lawyer.

Sean Gates, senior partner at London-based Beaumont and Sons, told Asian airlines and insurance industry representatives at a conference in Kuala Lumpur that less than half the invited governments had responded to an ICAO questionnaire on the issue. And those that did showed widely varied reactions. "It is vital that airlines and all those involved in airline travel should lobby the governments to secure their input and produce a more affordable approach to war risk liability," he said.

Gates was speaking at the first Willis Aviation Asia-Pacific Insurance Conference, held in association with the Association of Asia Pacific Airlines (AAPA) and hosted by Malaysia Airlines. It was expected to start an ongoing dialogue between insurers and airlines as they grapple with rising costs and the increasing complexity of aviation insurance in a world now living with terrorism and a war in Iraq.

The AAPA and other airline bodies have been publicly pressing their strongly held conviction since '9/11' that terrorism using commercial aircraft is not targeted at airlines, but at governments and that these governments should take responsibility for the costs of the terror.

The need for airlines to introduce the viewpoint to wider debate emerged as a main theme of the conference, held at MAS's training centre in the Malaysian capital. There were also calls for a new approach to air accident investigation and debate on current levels of insurance premiums.

The boom or bust nature of the aviation insurance cycle is being driven more by supply of, and demand for, insurance capacity than by true analysis of overall risk and an airline's previous loss experience, according to Mark Hue-Williams, regional director of Asia for Willis Aerospace, one of the largest global insurance brokers and a company with its major airline client base in the Asia-Pacific. He said it is "time to go back to basics", even though the current environment is more complex than ever.

"This is a hotly debated subject, but the critical issue remains: there must exist a sustainable level of premium that is both justifiable to buyers and also sufficient to attract and retain the high quality capital providers necessary to cater for ever-increasing risk exposures

ICAO survey exposes government apathy over war risk liability

in the future.

"Only then will the aviation insurance cycle be less volatile," he said.

Both the AAPA and the aviation insurance industry see the conference as a critical step towards better understanding between them.

A second gathering is expected to be



Beaumont and Sons senior partner Sean Gates: vital that airlines and all those involved in airline travel should lobby governments to secure their input

held in February, 2004.

Said Dr Mohamadon Abdullah, senior general manager of corporate services at MAS: "It will be of great benefit for those of us who write the cheque for our premiums – and the cheque is now quite considerable – to gain greater understanding of the underlying principles that influence the aviation insurance market.

"We are well aware that those of you representing international aviation insurers and re-insurers also face similar uncertainties and problems."

Ralf Oelssner, director of corporate insurance at Lufthansa, outlined the destructive effect of over-capacity in the airline market and empathised with aviation insurers for suffering similarly

in their own market.

He questioned whether the insurance market had reacted well to 9/11 and asked if insurers may have made decisions that had brought into question their methodology, if one even existed. He warned the insurance market, when charging premiums, not to overdo it. "After all, we are in this together."

Andre Clerc, chairman and managing director of insurer La Reunion Aerienne, responded that competitive pressures on insurers meant methodologies and long-term partnerships were being threatened by short-term opportunism.

This made it harder for the insurance market to price their product properly. "It is critical for airlines to consider these implications before making decisions that could affect them adversely at a later date."

Christopher Hancock, underwriter at Faraday Syndicate at Lloyds, said while simple supply and demand controlled the insurance market, the need to properly rate each airline was crucial to the credibility of insurers.

Many airlines invested heavily in safety, but insurers were not creating sufficient incentives for those who went the extra distance.

He cited the large number of instances of Controlled Flight Into Terrain (CFIT) accidents by aircraft not fitted with Enhanced Ground Proximity Warning Systems (EGPWS).

Were insurance underwriters to give credit to those airlines that fitted them? It would act as an incentive to those yet to do so, he said.

Hancock also discussed accident investigation and the cultural and political problems involved with these processes and asked if it was time for an independent body to carry out investigations.

"After all, the referee in an international football match is always from another country," he said. ■

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100 YEARS OF POWERED FLIGHT - AN ASIAN PERSPECTIVE

Did Australian inventor supply the Wright stuff?

Controversy remains, but it appears likely the unselfish research work of Lawrence Hargrave contributed to the brothers' success

By Tom Ballantyne

When Orville Wright, watched by brother Wilbur, rose tentatively into the air above the sands of Kitty Hawk in the U.S. on December 17, 1903, thereby successfully completing the first powered flight – a mere 120 feet in 20 seconds – their names were forever etched in history.

Yet the Wright brothers' achievement may not have occurred for many more years without the likely contributions of a dedicated "gentleman scientist" who unselfishly unlocked many of the secrets of flight with experiments through the late 1800s and early 1900s on a lonely hillside overlooking the Pacific Ocean, near Sydney, Australia.

Indeed, as early as November 12, 1894, Lawrence Hargrave, Australian inventor of the box kite, linked four kites, added a sling seat and flew 16 feet, explained Ian Debenham, transport curator at Sydney's Powerhouse Museum.

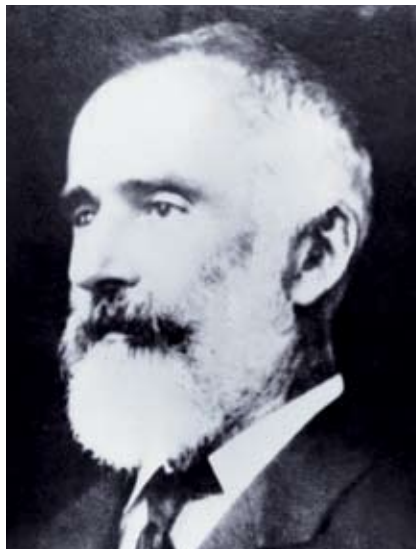
"By demonstrating to a sceptical public it was possible to build a safe and stable flying machine, Hargrave opened the door to other inventors and pioneers.

"The Hargrave-designed box kite, with its improved lift-to-drag ratio, provided the theoretical wing model that allowed the development of the first generation of European and American airplanes," said Debenham.

Yet Hargrave's contribution went far beyond the box kite.

In 1889 he built the first radial rotary engine (compressed air-driven) on which all aircraft radial rotaries were later based.

Debenham, who has spent many years researching Hargrave, believes he has now pinned down evidence showing the Wright brothers "Flyer" was



Lawrence Hargrave: would not patent his inventions

successful because they used several key principles discovered by Hargrave. These included three crucial aeronautical concepts: the cellular box kite wing, the curved wing surface and the thick leading wing edge (aerofoil).

Born in Greenwich, England, in 1850, Hargrave arrived in Australia with his family in December, 1865.

He was trained as an engineer at the Australian Steam Navigation Company and during this time invented, among other things, boots for walking on water and a transport system of single-wheel velocipedes hanging from a cable.

He became interested in exploration and from 1872 to 1877 was engaged in a series of expeditions to New Guinea.

In 1878, Hargrave, whose father became a New South Wales judge, was appointed an assistant astronomical observer at Sydney Observatory.

He held the post until 1883 when he

retired to devote his life to research into problems connected with human flight.

The *Australian Argus* newspaper in December, 1928, under the headline *The Air Age: The Man Who Made it Possible* quoted a president of the Royal Society who 34 years earlier had said: "Sydney will some day be noted not so much for its beautiful harbour, but as the residence of the inventor of the flying machine, Lawrence Hargrave.

"Yet all Australians gave to him was indifference.

"They called him a 'kite flyer', this man who taught men how to fly and the so-called wise ones tapped their heads."

Even Hargrave wrote in the 1890s that sadly "the people of Sydney who can speak of my work without a smile are rare".

The *Argus* wrote the tappers of foreheads tapped even more when Hargrave abandoned his study of birds "as a useless pursuit".

The extraordinary muscles and build could not be imitated, he said. So he looked elsewhere in nature for inspiration and found it, said the *Argus*, in the humble earthworm.

He built a model of an earthworm that replicated its forward, lateral and vertical movement and applied mathematics to those movements, according to the newspaper. He then translated the theories to models of planes and other machines.

Hargrave received no financial backing from Australian authorities, but he believed passionately in open communication within the scientific community.

He would not patent his inventions. Instead, he scrupulously published the results of his experiments, both in Europe and North America.

The impact of Hargrave's work on the Wrights has always been somewhat controversial.



They themselves, constrained by politics and patent problems, always denied there was any influence.

The link, according to Debenham, lies with another aviation pioneer, Octave Chanute.

A French-born American civil engineer, who published the first history of aviation, *Progress in Flying Machines* (it has an entire section devoted to Hargrave's experiments), he is best known for the support and encouragement he gave the Wright Brothers during the years they were developing their aircraft.

As early as 1893 Chanute wrote that "if there be one man more than another who deserves to succeed in flying through the air, that man is Mister Lawrence Hargrave of Sydney". Chanute corresponded with the Wright Brothers and in this way passed on Hargrave's critical aeronautical findings to the men who were to become the first individuals to achieve powered flight, said Debenham.

There is little disagreement elsewhere on the importance of Hargrave's contribution.

The design of the first successful aircraft in Europe, built by Alberto Santos-Dumont in 1906, was based on

'HARGRAVE'S CRITICAL AERONAUTICAL FINDINGS WERE PASSED ON TO THE WRIGHT BROTHERS'

Hargrave's box kites. When Gabriel Voisin built the first commercially available aircraft in Europe, he actually called them "Hargraves".

One of the most remarkable aspects of the Hargrave story is that many of his original kites and radial engines, along with crucial documents on his experiments, still exist and are held by Sydney's Powerhouse Museum.

Hargrave, who died in 1915 "of a near broken heart" shortly after the death of his son in the First World War at Gallipoli, had wanted his work to remain in Australia, but disagreements with local

museums led to the entire collection being snapped up by the Deutsches Technological Museum in Munich, Germany.

However, many kites and engine models were destroyed by Allied bombs during World War II.

Those that did survive, including 25 working models of kites and aeroplanes, as well as engines, were returned to Sydney in the 1960s, mainly due to the work of the late Australian aviation historian Hudson Shaw.

Later this year, the Powerhouse Museum is planning a major exhibit on Hargrave and his work.

It will detail the links between the Australian inventor and the Wrights' first flight.

At the time they made history Hargrave was sick with typhoid fever, but as soon as he heard of their feat he sent them a congratulatory message!

Whether or not Hargrave, if he had been given support instead of scorn in his own country, could have beaten the Wrights into the air is hypothetical.

Yet in 1992, students at the University of Sydney built an aircraft from the original blueprint of a powered aircraft designed by Hargrave in 1902. It flew. ■

What is it about Mainland China that makes airline managers around the world drool like a pack of pimply teenage boys at a Christina Aguilera concert?

It's not a trick question and the answer is simple. The Mainland's domestic air travel market is tipped by global aviation bodies such as the International Air Transport Association (IATA) and manufacturers Airbus Industrie and Boeing to grow faster than anywhere else in the world in the next two decades.

According to estimates from the World Tourism Organisation, China is expected to host 180 million tourists a year by 2020, while generating 100 million outbound travellers. Huge numbers when you consider the U.S. received just 72 million foreign travellers in 2001.

There is more. Mainland air travel is not only growing quicker than anywhere else, the market also is opening itself to foreign airlines at breakneck pace.

In the past six months, the Civil Aviation Administration of China (CAAC) has inked new air services agreements (ASAs) with a plethora of countries, among them France, the Netherlands, Singapore and Malaysia. In all cases additional rights available under the new bilateral deals were either doubled, tripled, or extended beyond these figures when compared to former agreements.

In October, Singapore and Beijing arrived at a new deal that gave Singapore Airlines access to 10 additional mainland points, plus a tripling of cargo flights between the two countries and 75% more passenger services.

But while noteworthy, none of these agreements will be as significant as the new Sino-U.S. pact. Formal talks are expected to begin in the next few months on this subject.

A new and more open agreement between the two countries will, without doubt, set a precedent for the industry's liberalisation worldwide – the U.S., after all, has the world's largest air travel market, with China rapidly gaining ground on the leader. Link the two and the result will be the development of the world's biggest air travel and tourism market and possibly one to eventually surpass even that of the transatlantic market.

The last bilateral signed between the U.S. and China, in 1999, doubled the number of scheduled services allowed from 27 to 54 frequencies per week. But only four U.S. carriers were designated – United Airlines and Northwest Airlines for passenger services and Federal Express and United Parcel Service for freight.

You can bet your last dollar the U.S. airlines left out in the last deal will be clamouring for designation this time. They will probably get it, too, along with

China may be key in breaking down U.S. market barriers

Inside Greater China by Oscar Seow



another substantial increase in frequencies between China and the U.S. given the CAAC's recent track record.

But there is another, arguably even more important dimension to the Sino-U.S. talks that will be carefully watched both by Asian hub airports with aspirations to win more Chinese business and the world's major airline alliances.

U.S. carriers, like Delta and North-

west, are pushing the CAAC for third country code-sharing into China, which would allow them to offer enhanced interline services with partner carriers through hubs like Tokyo and Seoul.

'A NEW SINO-U.S. BILATERAL AGREEMENT COULD BE A MAJOR STEP TOWARDS GLOBAL ALLIANCE MEMBERSHIP FOR MAINLAND CARRIERS'

west, are pushing the CAAC for third country code-sharing into China, which would allow them to offer enhanced interline services with partner carriers through hubs like Tokyo and Seoul.

Already, Seoul's Incheon International Airport is challenging Hong Kong for the title of the fastest growing hub to serve the Mainland, albeit from a much lower base.

If Delta, for instance, was allowed to code-share on Skyteam alliance partner Korean Air's services to Mainland cities from Seoul, growth should be even better.

And a new Sino-U.S. bilateral could prove to be a major step towards global alliance membership for Mainland carriers. Earlier this year, the CAAC stated emphatically it would no longer protect its airlines from foreign competition at the expense of under-providing capac-

ity for passenger demand on heavily travelled international routes. Yet the CAAC will no doubt ask for a protective blanket in any new agreement for the three major Mainland carriers through expanded opportunities for code-sharing across the Pacific to U.S. gateway destinations.

Rights to code-sharing beyond U.S. gateway cities to secondary domestic points also is a possibility in a new Sino-U.S. ASA, although a remote one this time around.

Similarly, U.S. carriers are expected to push for code-sharing rights to secondary Mainland cities. But whatever code-sharing opportunities arise from a new bilateral, they will result in the Mainland airlines becoming more attached to their respective U.S. airline partners and global alliances.

These developments will be very beneficial to U.S. airlines and, in the longer term, for China. But readers may ask why should they set a precedent for airline industry liberalisation elsewhere in the world? The answer is that eventually China might be the only country with the economic clout to crack open the tightly regulated U.S. aviation market.

For the U.S. airlines the potential on offer in the Mainland, over the long-term, is simply too good to pass up.

Besides the appeal of the growing domestic air travel market, there are aircraft deals to be done in China and increasingly higher value-added freight to be flown between the two countries – all good bargaining chips for China in extracting a favourable ASA from the U.S.

After all, it's one thing to drool over Ms Aguilera. But it's another thing entirely to be given a backstage pass to her dressing room. ■

IATA experts list voice communication, CFIT, security, air traffic facilities in need of improvement, but say ...

Safety: its about working together

By Charles Anderson

Ask the International Air Transport Association's top two Asia-Pacific safety men which operational areas they would like to see improved in their efforts to cut accident numbers and you receive a long wish list for an answer.

Dave Behrens, director of safety, operations and infrastructure, homes in on the integrity of the data aircraft increasingly rely on in all phases of flight, the challenges posed by voice communications in such a large region and the continuing headaches that security risks bring.

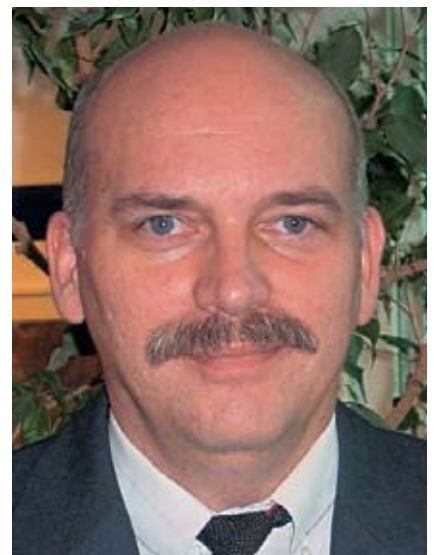
Neil Jonasson, assistant director, pinpoints controlled flight into terrain (CFIT), approach and landing problems and marginal airport and air traffic facilities.

But when each has run through the complex areas he specialises in, both IATA executives emphasise that, in a wider sense, the cooperation that already exists between the region's airlines is more important than any individual advance.

"Look at the harmonisation and the success in getting the diverse states in the South China Sea to agree to a complete restructure of their air space in the last five years," said Jonasson. "It has made it not only a lot more efficient, but a lot safer because there is less crossing traffic. Europe is struggling to do the same thing with a lesser number of states."

He also pointed to the Asia-Pacific's joint role in fostering advances such as FANS (Future Air Navigations System), the satellite-based aid that clicks in when normal air traffic control systems cannot function.

"The new technology for FANS was born in this part of the world and is now spreading to the Atlantic after being here for 10 years. There are some unique opportunities in the Asia-Pacific. We try



IATA director of safety, operations and infrastructure, Dave Behrens: no longer manual flying

to foster them and not wait until the U.S. or Europe does it or some higher-standing body authorises it," he said.

"We want to keep this cooperation and development going. It's done by getting everyone involved. We see the airlines meeting together so they understand each other's problems. It's not just efficiency. At the same time, it is aimed at air safety, because if we can't do it with safety we can't do it at all."

For Jonasson, who specialises in flight operations areas, the "people" factor is a primary part of IATA's ongoing global programme to minimise CFIT and approach and landing accidents.

"All the effort we are putting into approach and landing accidents and aerodrome accidents involves reducing the human factor that figures so highly in most major ones," he said. That means taking people out of the equation whenever possible, to cut the risk of human error, and convincing airports' air traffic



services they should cater for automated aircraft on a "routine and predictable basis".

Approach and departure procedures need to be consistent. "You are struggling to find two states in this large region that do them the same. They have their own interpretations. Standardisation is one of the big parts of our job," Jonasson said.

When it comes to runway collisions, a high profile concern in Europe, IATA's role is a preventive one. "We have not had the number of incidents in the Asia-Pacific that have happened in Europe and the U.S. We are concerned that our busy airports are making efforts to make sure we don't join the runway incursion accident statistics."

However, CFIT, the cause of nearly half of all fatalities worldwide in 2002, is a continuing source of concern. Again, Jonasson emphasises the pairing of the latest technology with the people who operate it.

Yes, new hardware such as Honeywell's enhanced ground proximity warning system, other forms of ground mapping and advanced aids will help. "But these have to be matched by trying to eliminate procedures during approach and departure from airports that lead flight crews into a corner if they make a mistake – a corner they can't get out of."

Jonasson is also keen to stop the "dive and drive" non-procedural technique on approach. "That's where you dive down to an altitude, go along it and then dive down to another altitude."

He wants autopilot to be utilised in the prescribed manner, using a constant flightpath above the terrain all the time, instead of stepping down over it. Airport procedure designers and air traffic controllers must set sensible procedures and flight paths in the first place.

"There's not just one solution here; there are many solutions. It [increasing safety] is one of those things that is not visible. But then you start to have a dramatic effect over the years of aircraft not hitting the ground any more. It's a long programme," he said.

Regionally, Jonasson sees marked contrasts at airports. At the lower end, that too is a worry. "We have the most developed and the most undeveloped countries. The flight ops concern is that a lot of airports and air traffic facilities are very marginal and very demanding. They run on minimum standards, but not below standards – we would stop that very quickly.

"They are very demanding on communications and also the conditions of runways and runway lights, maintenance and navigation aids. Those sorts of things are a continuous safety concern."

WITH DATA COMMUNICATIONS THERE WOULD BE NO NEED TO ASK 'WHAT DID HE SAY?'

Behrens, who specialises in airspace planning, is at pains to stress the importance of the data used under these circumstances and for a myriad other flight functions.

"It is no longer manual flying. It's data-driven. The timelessness, the accuracy, the integrity of the data is continuously a challenge. This is really, really important," he said.

"Everywhere we go we have IATA top objectives that we preach. AIS (aeronautical information services) is a big one and already we have seen a lot of improvement in that area."

Behrens wants air traffic decision-makers in particular to take note of the navigational capabilities of today's smart, intelligent aircraft, including aids such as ADS (automatic dependent surveillance), a FANS application which transmits information on an aircraft's precise position to air traffic control, via satellite, without the need for direct action from the flight crew.

"Countries in the greater picture can have radar-like surveillance at a fraction of the cost. Obviously that's going to help safety tremendously," he said.

IATA is a strong advocate of data-linked communications, something of special importance in the Asia-Pacific

with its many countries, languages and accents. High frequency (HF), third party voice communications are a central concern.

"We are starting to have a medium that is very difficult to understand, but when you add to that voice and HF propagation problems, it makes it even more difficult to understand," said Behrens.

"Try putting a Japanese dialect, an Aussie, a Kiwi and someone from the UK at the same table and throw in the difference between Japanese English, Hong Kong English and Chinese English and you have a difficult conversation.

"But if we did it with data communications, you would not have to ask 'what did he say?'"

For Behrens, who travels the region with his IATA colleagues drumming home their safety messages, the importance of taking responsibility and learning from mistakes is a key factor. He is particularly keen to see a non-punitive reporting system in operation over accident reports.

"Many times we get reports and we pass them on to the states. Some states will take the material, act on the facts and come up with solutions. You have other states that say, 'yes, we took care of the problem, we fired him,'" he said.

"We are still struggling a bit there. If we can learn from our mistakes, be honest about them and learn to do something constructively from these experiences, we can go a long, long way. We are getting there, but it is still something we don't see 100% yet." ■

New audit systems designed to set common standard

The International Air Transport Association (IATA) has two linked audit systems in place, one already functioning, the other due to launch soon, in which safety considerations figure high on the checklist, writes Charles Anderson.

The Operational Quality Standard (OQS) audit, introduced in January 2000, is now applied to every airline hoping to join IATA as a final requirement after all governance matters have been examined.

"It's a peer evaluation. The teams are led by an IATA person and we use either current or ex-airline senior people in the field of flight operations, safety, security, maintenance and engineering," said Neil Jonasson, assistant director for safety operations and infrastructure, Asia-Pacific, who leads the regional team.

Senior management from the CEO down are expected to be playing their proper role in providing quality of safety throughout the airline. The carriers' practices must come up to expected standards.

The IATA Operational Safety Audit (IOSA), still officially slated to begin in July despite redundancies in IATA's safety department caused by across-the-board budget cuts, has grown out of OQS. It aims at standardising the many and varying assessments of airlines by each other for commercial reasons such as code-sharing, part ownership and equity purchases.

The aims are to save money by reducing the number of audits and to provide a common standard that everyone accepts.

"What they want to do is know they are not going to be embarrassed commercially or otherwise by going into a public partnership, selling tickets and carrying passengers and freight with an airline that then has a safety problem," said Jonasson. ■



By Melody Su
in Beijing

A year ago Chinese airline safety was enjoying a good reputation. But two tragedies, the crashes of an Air China B767-200 in Korea in April that took 129 lives and a China Northern Airlines MD-82 in May, when 112 passengers and crew were killed, shocked the industry.

Yet compared to 20 years ago, safety at China's carriers has improved greatly. And during a period of surging growth this improvement has come about through the joint efforts of the Civil Aviation Administration of China (CAAC) and the airlines of China themselves.

According to statistics, the industry recorded 16 billion air tonne-kilometres in 2002, up 13.3% over 2001. The number of passengers carried increased 11.6% to 84 million and cargo and mail, at two million tonnes, rose 17% in the same period. Airlines completed 2,001 million flight hours, up 10% on 2001.

At the annual working conference of the civil aviation industry in January, the CAAC said that in the next two decades, as the industry expands faster than anywhere in the world, the target for China's airlines should be to raise their standards rather than rely solely on growth.

Experts believe that central to achieving this goal is the carriers' commitment to improve their safety management so that China will have a safety record equal to the safest airlines in the world.

Earlier this year, at the annual civil aviation safety meeting, the CAAC set out its aims on safety and security for 2003. It listed its priorities in the following order:

- to prevent fatal accidents in the commercial aviation sector
- to end hijackings
- to prevent general aviation accidents
- to put an end to fatal accidents on the ground at airports
- to reduce accidents in engineering and maintenance workshops
- to reduce the commercial flight incident ratio to below 1.3 per 10,000 flying hours
- to reduce the general aviation flight incident ratio to no more than 2.5 per 10,000 flying hours
- to reduce the flight incident ratio at flying colleges per 10,000 flights to less than 0.7
- to reduce the number of commercial flight incidents caused by air support to under 0.45 per 10,000 flights and general aviation flight incidents below 0.6 per 10,000 flights
- to reduce the flight incident rate caused by air traffic control to less than 0.15 per 10,000 flights

China makes safety its top priority

- to reduce airport incidents caused by flight area management to less than 0.1 per 10,000 flights and for bird strike incidents to be under 0.3 per 10,000 flights

CAAC minister, Yang Yuanyuan, said the industry must adopt strict safety management, high standards, tight regulations, a relentless system of checks, vigilant supervision and tough training.

In fact, China is redefining its whole

by China's State Council, will include responsibility for safety management, market management, macro-control, air traffic and foreign relations.

For safety management, its main function is the drafting of regulations and standards. Last year, the CAAC formulated and amended 35 regulations and standards. It paid close attention during 2002 to ensure airlines conformed to regulations to enhance safety standards in areas like operations management, flight training, flight hours flown, airworthiness and maintenance.

Meanwhile, 34 safety documents were abolished last year as airlines and regional administrations streamlined the system to ensure a smooth transition for the mergers. CNAH, CEAH, CSAH and the smaller Hainan Air Group, which started its own consolidation programme earlier than the 'Big Three', are currently in the process of amending their operations manuals, drafting new and more comprehensive training programmes and unifying flight operations and procedures. Provincial carrier Hainan, which has acquired Xinhua Airlines and Chang'an Airlines to help it compete with its larger rivals, has become the first of the new groupings to have its operations certificate approved by the CAAC and its regional administrations.

CEAH has drafted regulations designed to eliminate, for example, serious cabin safety mistakes and to improve dangerous goods transportation standards.

A combined force of state, industry and public involvement is necessary to oversee the airline industry and ensure its standards rise. But once the lengthy process of consolidation has been completed continuing responsibility for safety will rest heavily with the airlines themselves.

The CAAC official said the biggest change brought about by the mergers last October was the redefining of the CAAC after it eliminated the role of operator from its responsibilities. The CAAC regarded its airlines as its own children and it was difficult for it to be fair to the other carriers, said the official. In its independent role, the CAAC will be fair to all.

Now the airlines and the CAAC share the same goal – keeping China's skies safe. ■



China Eastern Airlines: reorganising its safety management system along with other consolidated airline groupings

safety management system.

A CAAC official, who chose not to be identified, told *Orient Aviation* that following the industry's initial restructuring, the three major air holding companies and former CAAC carriers put a major emphasis on safety. For example, the China National Air Holding (CNAH) held a special flight management meeting to establish an air safety office. The China Eastern Air Holding Company (CEAH) set up a safety management committee and organised eight safety management systems, which include safety responsibility, punishment and safety awards. The China Southern Air Holding Company (CSAH) established an air transport division in which air safety and establishing safety trends play a prominent role.

Since the industry's restructuring, the CAAC has been concentrating on its sole role as air transport's regulator. This, according to policy drawn up

LOSA wins Cathay approval

Cathay Pacific Airways has confirmed its ongoing support for the breakthrough flight deck safety initiative, Line Orientated Safety Audits (LOSA). The airline initially introduced changes in its overall air safety programmes as a result of an audit conducted in 2001, said Captain Rick Fry, the airlines deputy director flight operations.

A full analysis of the findings will be completed in the near future and another LOSA may be conducted sometime next year, he told *Orient Aviation* in March.

Designed by the University of Texas (UT) Human Factors Research Project, LOSA is the first system to provide airlines with a real time record of cockpit daily operations.

It has the full support of the International Civil Aviation Organisation (ICAO), which hopes it will become part of standard operating procedures for all airlines within a few years.

LOSA overcomes a major drawback of other audits – pilot objections to any system that resembles a “spy in the cab”. With LOSA, independent, trained observers sit in the cockpit during flights on a non-jeopardy basis.

Neither pilots nor their specific flights are identified.

The records of the observers include cockpit crew errors, threats to flight safety and how crews deal with them. It also

can be utilised for cabin crew and engineering operations.

The system has been adopted by Air New Zealand and Taiwan’s EVA Air. Qantas Airways conducted trials last year.

Nearly all of the major carriers in the region have been looking closely at the LOSA system.

While Cathay Pacific would not disclose the details of its LOSA findings, Capt. Fry said that overall the airline had been “extremely comfortable” with the outcome of the trials.

The LOSA was conducted during poor weather in the region.

Also, the audit was held during “external issues to flying”, including an ongoing issue over crew rosters, said Capt. Fry.

“In many respects we couldn’t have taken on the audit at a more challenging time in the airline’s history. We felt comfortable looking back and saying, well, there were issues we could have done a little better, but also the way the crews were managing these challenges gave us confidence,” he said.

He described LOSA as part of the overall package any airline required to address its safety and standards.

“It is just one more tool. I think the importance of LOSA is that it explains some of the whys rather than the whats,” said Capt. Fry. ■

OPPORTUNITY By Charles Anderson

HOVERS

Hong Kong's helicopter operators see lucrative business potential in southern China, but frustrating obstacles remain on both sides of the border.

Hong Kong's helicopter operators can be forgiven a wry smile at official talk of the city's expanding role as a business hub for the Pearl River Delta.

With collaboration between the two a cornerstone of the Hong Kong Government's economic planning, logic dictates a healthy market for whisking business people from its central financial district to the fast-growing manufacturing areas of Shenzhen, Dongguan, Zhuhai and Guangzhou. It can take two to three hours by road, rail or boat to arrive at a specific factory. A chartered helicopter could make it in 20 minutes.

But put that point to the three helicopter companies who could provide such a service and you realise the formidable obstacles still in their way.

First come practical restrictions over where to land. With Hong Kong as a Special Administrative Region (SAR) within China, customs, immigration and quarantine (CIQ) clearance is needed. At present these are only offered at Guangzhou's Baiyun and Shenzhen's Baoan airports, both of which are located away from the city centres with clogged roads liable to cause delays.

Then there is the military's control over airspace, restricting helicopter flight paths. Finally come prohibitive costs in the form of a US\$3,000 compensation fee payable to the Civil Aviation Administration of China (CAAC) for the use of airspace and US\$1,500 in administration fees for a one-time charter permit.

"Government agencies have to take a broader perspective," said Andrew Tse, chief executive of HeliHongKong. "Owners of airports must encourage helicopters to come in by having attractive landing and service fees. At the moment it is more like a blackmail situation. It can't go on forever. It doesn't make commercial sense."

Jolie Chung, business development manager at the Hong Kong Aviation Group that includes Heliservices as its



HeliHongKong: current passengers are big spending tourists or high-rolling gamblers

helicopter arm, shares his frustrations. "We want to be able to fly passengers to Dongguan or downtown Guangzhou or factory areas in southern China," she said. "The essence of being able to use helicopters is to land where clients want to go. But we are restricted to airports because of international clearance."

Allan Tang, sales and marketing manager for CR Airways, is a little more optimistic. His company is talking to officials in Zhuhai about setting up CIQ at its downtown heli-pad. "They don't have CIQ facilities there yet. But if we could get clearance we could then fly on to other cities in the Pearl River Delta."

At HeliHongKong, the bulk of revenue comes from regular, twice-an-hour services between Hong Kong and Macau, utilising five Sikorsky S76C+ 12-seaters in conjunction with Macau-based East Asia Airlines, owned by casino magnate Stanley Ho's company, STDM. Ho once

used to own dedicated cargo carrier Air Hong Kong before eventually selling it to Cathay Pacific Airways.

Two AS350 B3 Squirrels are on call for sightseeing tours and two AS315 Lamas are used for lifting work.

Most passengers are either high-spending tourists or, more likely, high-rolling gamblers, the same market targeted by its new scheduled, four daily return flights from Macau to Shenzhen where CIQ is now carried out through dedicated facilities.

"Shenzhen airport people have contributed to its success. Without the dedicated terminal it would be very inconvenient," said Tse, who also owns HeliHongKong. The service carries an average of just below four passengers a flight, but Tse sees a major increase coming on this and his Hong Kong routes when Macau's two new casino operators open for business in 2005 under a re-or-

ganisation of the gambling sector that will see it expand and modernise, attracting a wider range of customers.

Regulatory hurdles, however, have restricted HeliHongKong to an average of one charter flight a day from Hong Kong to Shenzhen. "We are treated no differently from international carriers," said Tse. "The flight has to return to Hong Kong because we do not have fifth freedoms; it can't go on to Macau. We have to use a Hong Kong-registered aircraft. Macau has to use a Macau-registered aircraft. It makes life very difficult."

Tse is also frustrated by present facilities in Hong Kong where the city centre helipad his company built on government property at the Macau Ferry Terminal must be expanded if HeliHong-Kong is to grow significantly.

Charges are levied as though it was a commercial property, not on a per-use basis, cutting into thin margins. More importantly, its size rules out refuelling or parking facilities, with both functions currently carried out in Macau. Maintenance problems can result in temporary closure. Last year there were 10 flight cancellations due to aircraft stranded on the helipad, with one causing 15 hours of lost service.

A Hong Kong Civil Aviation Department consultation study into the best site for a new international heliport and its likely demand is due to be submitted to Hong Kong's legislature soon. Tse believes the ferry terminal will again be chosen, a recommendation that coincides with a study submitted by HeliHongKong to the government last June. The company, which has proposed building a new facility itself to be offset by rental reductions, has heard nothing since.

"The situation is becoming intolerable," said Tse. "We cannot carry on doing business like this. We urge the government to resolve the situation. We hope it will consider our proposal once and for all."

However, HeliHongKong's boss has praise for the Hong Kong Government's initiative that included helicopters in an air services agreement concluded with China last year. This, he said, was a big step. But he soon returns to the restrictions his operation faces. "The next step is to improve the helipad. Either they should do it or let someone else do it."

"We want to prove to the government that if there is demand we can provide a good service. We want to take the risk to prove the point. My vision will be a service from Hong Kong city centre to Guangzhou city centre. If we have proper helipads and dedicated routes we can operate a 35-minute flight."

At Heliservices, current restrictions mean services into southern China are not high on Jolie Chung's agenda. High costs and the inconvenient location of Shenzhen



Jolie Chung, business development manager at the Hong Kong Aviation Group: we have tried to fly into China for three or four years. There's still a few years to go

airport also are deterrents.

"I believe the demand would be there because passengers want to land where their factories are or where they are playing golf. But we don't see this as an immediate thing we want to pursue at the moment," she said. "We have tried to fly into China for three or four years. There's still a few years to go. Our plan is to do more work in Hong Kong because that is where the work is available."

For Heliservices, that means expanding its sightseeing and airport transfer operations from the helipad on top of the Peninsula Hotel, owned by its parent, the Kadoorie Group, maintaining charter services to Macau and continuing with lifting work for Kadoorie companies and others. One twin-engine AS335 Squirrel and three AS315 Lamas make up its fleet.

The Peninsula's facility is the only rooftop hotel helipad in Hong Kong, and probably in China, said Chung. "Our goal in domestic charter is to make helicopters more popular. We are working closely with the Peninsula to achieve something never done before."

At CR Airways, founded in 2001 by Robert Yip, chairman of China Merchants Holdings with its first flights in spring

2002, mainland operations are seen as the key to growth. At present it operates a single Sikorsky S76C+ available for charter to Macau, Shenzhen and Guangzhou. It hopes to expand as business increases with other plans in the pipeline apart from accessing Zhuhai.

"We are losing money at the moment," said Allan Tang. "But long-term we think this is a very good opportunity."

Targets include a twice-daily Shenzhen service, more Macau charters for its new casinos and golf tour charters to southern China.

The company also has its eye on a gap it believes it has found in the market. Starting this summer, it hopes to offer charter flights to Shenzhen for Taiwanese businessmen flying into Hong Kong International Airport from Taipei and Kaohsiung.

Using the Hong Kong Business Aviation Centre, also based at the airport, they could be whisked to Shenzhen in 11 minutes, said Tang.

"We think this is a great opportunity for market share. With our service they can make the trip from Taiwan to, say, Dongguan and back in the same day. ■



Allan Tang, sales and marketing manager for CR Airways: Mainland operations a key to growth. Long-term opportunities are good

S-92 TALKS

HeliHongKong and East Asia Airlines are in talks over leasing a 19-seat, medium-weight Sikorsky S-92, the American manufacturer's first civil rotorcraft to receive FAA certification since the S-76's debut in 1978.

The first S-92s are expected to go into service in early 2004, but Andrew Tse sees 2005 as a likely date for a Hong Kong delivery. "The Hong Kong landing pad is a big hurdle," he said, referring to his hopes for an expansion of the facility at the Macau Ferry Terminal. "We believe there will be a big demand for this aircraft."



By Charles Anderson

Metrojet deal a shop window for Gulfstream

Gulfstream Aerospace and Metrojet, the fixed-wing division of the Hong Kong Aviation Group (HKAG), had cost-effectiveness in mind when they decided to switch the Gulfstream IV long-range, large-cabin business jet operated by Metrojet at Hong Kong International Airport for a more modern, mid-range G200.

The giant American manufacturer and the Kadoorie Group company have been partners since April 2001 when the 11-passenger GIV went into charter service at Hong Kong Business Aviation Centre under an agreement that saw Gulfstream retain ownership with Metrojet acting as managers.

Since that time Metrojet, which also operates a Raytheon Hawker 700, has doubled its movements, reaching 120 last year, with an early utilisation of 20 to 30 hours a month for the GIV increasing to between 70 and 80 hours.

Current customers, apart from individual charters, include three who block book the aircraft for a set number of hours and Kadoorie companies including The Peninsula Group of Hotels and China Light and Power Holdings. Chairman Michael Kadoorie, an aviation enthusiast, is often on board.

The 10-passenger G200 was delivered in late February with the GIV returning to the U.S. in March. Jeffrey Lowe, Gulfstream's regional vice-president, North Asia and the Philippines, sees the new model, with its lower operating costs, as better suited to current business needs.

"The GIV is a long-range aircraft, but you don't need that for a regional aircraft," he said. The G200, with its maximum 6,600-kilometre range, can reach as far as India and Australia from Hong Kong, with the same interior comfort offered in a shorter body. A longer flight, to the U.S. or Europe, will require one stop, the same as with the 7,800-kilometre GIV.

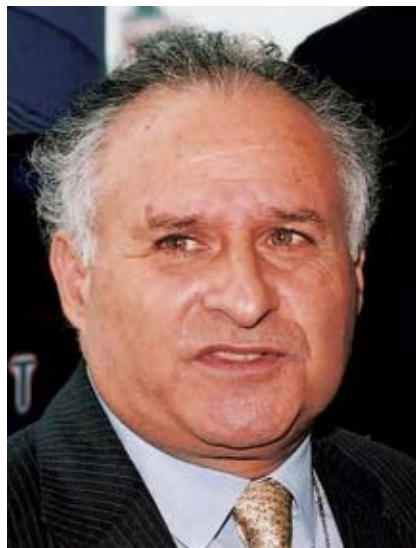
"It's a lighter plane and landing fees are less. The overall economic package is good for these times. We are responding to the economic situation," he said.

"It is priced to stimulate demand. The GIV costs US\$6,000 an hour to charter. The G200 is US\$4,500. It all adds up."

Lowe also has an eye on the shop window in Gulfstream's arrangement with Metrojet, the only such deal the company has worldwide. It began with an approach from Michael Kadoorie.

"He is passionate and committed to the business. He already had the Hawker 700 and was looking for a partner to move the business forward.

"It took us a while to warm up to the idea. But once we understood the



Michael Kadoorie, chairman of Metrojet parent company, the Kadoorie Group: approached Gulfstream



Albert Lam, Hong Kong's director-general of civil aviation: to try to improve business aviation environment

market and what we could get out of it we worked out something that made sense for both of us," said Lowe. "We are normally in the business of selling aircraft. In this case, these planes are owned by us and leased to Metrojet. There's no bank in the middle."

However unusual the arrangement might be, it was ideal for what Gulfstream wants to achieve in a region that accounts for only 5% of the company's global business.

Lowe is hoping to add four to six new aircraft orders this year to join the 23 Gulfstreams already operating in North Asia.

"Both sides are trying to stimulate the market. It is hard to get people interested in chartering business jets if you haven't got something they can try. We saw the potential to increase our visibility," said Lowe.

"It gives us a tool here. We have an aircraft on hand for someone, say in China, who is interested. We don't have to bring one here."

Kadoorie was on the tarmac along with Hong Kong's director-general of civil aviation, Albert Lam, when the G200 arrived at the Hong Kong Business Avia-

tion Centre. HKAG has an equity stake in the facility and bases its Heliservices helicopter arm there.

Acceptance of business aviation was gradual, but increasing, said Kadoorie. "The tunnel is getting bigger and the light is coming through." Lam, who promised his department would try to improve the environment for business aviation in Hong Kong, pointed to the aviation centre's record 1,500 movements in 2002 as proof of growing interest in the sector.

The G200 is the former Galaxy business jet that joined the Gulfstream fleet in 2001 when General Dynamics, Gulfstream's parent company, bought Galaxy Aerospace. It took its bow in the region at Asian Aerospace 2002.

Hong Kong certification took less than five months, compared to the usual six to nine months for a new aircraft. "We had learned a lot from the GIV certification," said Metrojet's chief pilot Laurence Stapleton. "I have a lot of respect for the Civil Aviation Department. They, and Gulfstream, have done a wonderful job in consultation and cooperation." ■

ASIA-PACIFIC FLEET CENSUS UPDATE

Airline/Aircraft	Engines	In Service Mar 31, 03	On Order	Options
Aboitiz Air (Philippines)				
YS-11-100	RR Dart 543-10K	2	-	-
YS-11-500	RR Dart 543-10/10K	4	-	-
YS-11-600R	RR Dart 543-10/10K	1	-	-
Air Andaman (Thailand)				
Fokker 50		3	-	-
BAe Jetstream 32		2	-	-
Air Asia (Malaysia)				
B737-300	CFM56-3	6	1	-
<i>Leased in: GECAS</i>				
Air Caledonie (New Caledonia)				
ATR42-320	PWC PW121	4	-	-
Do 228-212	Gar. TPE331-SA 2520	1	-	-
Aircalin (Air Caledonie International, New Caledonia)				
A330		2	-	-
A320-200		-	-	1
B737-300	CFM56-3B2	1	-	-
<i>Leased in:</i>				
DHC6 Twin Otter		1	-	-
Air China				
B747-400C	P&W PW4056	8	-	-
B747-400	P&W PW4056	4	-	-
B747-200/5F	P&W JT9D-7R4G2	4	-	-
B767-300	P&W PW4056	5	-	-
<i>Leased in: 1 Mitsui & Co</i>				
B767-200ER	P&W 4052/JT9D-7R4	5	-	-
B777-200	P&W PW4090	10	-	-
B737-800	CFM56-4C4	11	-	-
B737-700	CFM56	1	5 (2003-04)	-
B737-300	CFM56-5C4	19	-	-
A340-300	CFM56-5C4	3	-	-
<i>Leased out:</i>				
A319	V2500	-	8 (2003-04)	-
BAe 146-100	Lyc ALF502R-5	4	-	-
Air Do (Hokkaido International Airlines, Japan)				
B767-300ER		2	-	-
<i>Leased in: 2 (AWAS)</i>				
Air Fiji				
DHC-6-300 Twin Otter	PWC PT6A-27	1	-	-
DHC-6-200	PWC PT6A-20	1	-	-
<i>Leased in Air Vanuatu</i>				
Beech Baron 95-C55	Cont IO-540	1	-	-
Y-12 Mk-II	PWC PT6A-27	3	-	-
EMB 110-P1	PWC PT6A-34	2	-	-
BN2A-20 Islander	Lyc O-540-K1B5	3	-	-
Air HongKong				
B747-200F	GE CF6 50-E2	1	-	-

Airline/Aircraft	Engines	In Service Mar 31, 03	On Order	Options
Air-India				
B747-400	P&W PW4056	6	-	1
B747-300 Combi	GE CF6-80C2B1	2	-	-
<i>Leased in: 1 from Citicorp Leasing Inc</i>				
B747-200	P&W JT9D-7J -7Q	4	-	-
A300B4-100/-200	GE CF6-50C2	3	-	-
A310-300	GE CF6-80C2A2	13	-	-
<i>Leased in: 5</i>				
Air Japan (ANA subsidiary)				
B767-300	GE CF6-80C2B2F	8	-	-
<i>All ANA aircraft</i>				
Air Kiribati				
Y12 Harbin	PT6A-27	1	-	-
ATR 72-200		1	-	-
Air Macau				
A320-200	IAE V2527-A5	3	-	-
<i>Leased in: ILFC</i>				
A321-100	IAE V2530-A5	5	-	-
<i>Leased in: ILFC</i>				
A319	IAE V2530	4	1	-



Air Maldives				
A310-200	P&W PW-JT9D	2	-	-
<i>Leased in: A. I. Leasing Inc</i>				
Do 228-212	Gar. TPE 331-5A-252D	2	-	-
DHC-8-200	PWC PW123D	1	-	-
Air Mandalay				
ATR 72-212QC	P&W PW 127	1	-	-
ATR42	P&W 120	2	-	-
<i>Leased in:</i>				
Air Marshall Islands				
HS 748-2B	RR Dart 536	1	-	-
Do 228-212	Gar. TPE331-5A-252D	2	-	-

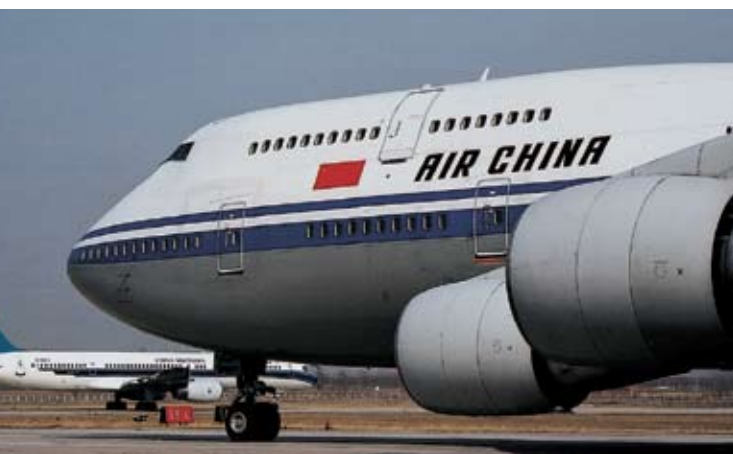
Airline/Aircraft	Engines	In Service Mar 31, 03	On Order	Options
Air Moorea (French Polynesia)				
DHC-6-300	PWC PT6A-27	3	-	-
<i>Leased in: 1 Leased out: 1</i>				
Air Nauru				
B737-400	CFM56-3C1	1	-	-
Air Nelson (New Zealand)				
Fairchild Metros	Garrett TPE331-11U-611	4	-	-
Saab 340A	GE CT7-5A2	4	-	-
Air New Zealand				
B747-400	RR RB211-524E	3	-	-
B747-400	GE CF6-80C2B1F	5	-	-
<i>Leased in: 4</i>				
B767-200	GE CF6-80A2	3	-	-
<i>Leased in: 3</i>				



B767-300	GE CF6-80C2B6F	4	-	-
<i>Leased in: 2</i>				
B767-300	GE CF6-80C2B6	5	-	-
<i>Leased in: 3</i>				
B737-300	CFM56-3C1	15	-	-
<i>Leased in: 10</i>				
A320		-	15 (2003-06)	10
Air Nippon				
B737-500	CFM56-3C1	22	-	-
B737-400	CFM56-3C1	2	-	-
A320-200	CFM56-5A1	9	-	-
<i>Leased in: 9 (ANA)</i>				
DHC-8-Q300		2	-	-
YS-11	RR Dart 543-10/10K	6	-	-
<i>Leased in: 6 ANA</i>				
Air Niugini (Papua New Guinea)				
B767-300		1	-	-
<i>Leased in: 1 AWAS</i>				
F28-4000	RR RB183-15H	3	-	-
F28-1000	RR RB183-15	3	-	-
DHC-8-200B	P&W PW123D	1	-	-
Airnorth (Australia)				
Emb 120ERJ		4	-	-
Fairchild Metro 23		4	-	-
Cessna 400 Series		11	-	-
Cessna 208B		1	-	-

Airline/Aircraft	Engines	In Service Mar 31, 03	On Order	Options
Air Pacific (Fiji)				
B747-200	RR RB211-524D	1	-	-
<i>Leased in: Qantas</i>				
B767-300ER	GE CF-6-80C2B6	1	-	-
<i>Leased in: Mukai Kosan Company</i>				
B737-700	CFM56-7B24	1	-	-
B737-800	CFM56-7B24	2	-	-
Air Paradise (Indonesia)				
A310		1	1	-
Air Philippines				
B737-200	P&W JT8D-7B/-9A/-17	10	-	-
<i>Leased in: 4</i>				
Air Rarotonga (Cook Islands)				
EMB110	PWC PT6A-34	3	-	-
<i>Leased in: 2</i>				
Air Sahara (India)				
B737-800	CFM56	2	-	-
B737-700	CFM56	5	-	-
B737-400	CFM56-3C-1	3	1	-
B737-300	CFM56	2	-	-
Canadair CRJ-200		7	-	-
Air Tahiti Nui (French Polynesia)				
A340		3	-	-
<i>Leased in: 2</i>				
ATR72-202	PWC PW124B	4	1	-
ATR42-500	PWC PW127E	4	-	-
Do 228-212	Gar. TPE331-5A-2521	2	-	-
Air Vanuatu				
B737-300	CFM56-3B1	1	-	-
<i>Leased in: Qantas</i>				
Saab 2000		1	-	-
<i>Leased in: Saab</i>				
All Nippon Airways				
B747-400	GE CF6-80C2B1F	23	-	-
B747-200LR	GE CF6-50E2	2	-	-
B747SR	GE CF6-45A2	9	-	-
B777-200/ER	P&W PW4090/4074	16	3	-
B777-300/ER	P&W PW4090	5	16 (2004-2006)	-
B767-300	GE CF6-80C2B2F	43	12 (2002-2006)	-
B767-200	CF6-80A	9	-	-
A321-100	V2530-A5	7	-	-
A320-200	CFM56-5A1	25	3	-
<i>Leased out: 9 Air Nippon</i>				
A340		-	5	-
<i>ANA has 66 aircraft Leased in</i>				
Alliance Airlines (Australia, formerly Flight West Airlines)				
Fokker 100		2	-	-
EMB 120		2	-	-
Archana Airways (India)				
LET L-410 UVP-E	Walter M601E-21	4	1	-
Fairchild Dornier 328-100		-	2	-
Ariana Afghan Airlines (Afghanistan)				
B727-200	P&W JT8D	3	-	-
A300B4		3	-	-
Asiana Airlines				
B747-400	GE CF6-80C2B1F	2	-	-
B747-400 Combis	GE CF6-80C2B1F	6	-	-
B747-400F	GE CF6-80C2B1F	5	2	-

Airline/Aircraft	Engines	In Service		
		Mar 31, 03	On Order	Options
B767-300/ER	GE CF6-80C2B2F	12	-	-
B777-200	PW 4090	4	6	-
B737-400	CFM56-3C1	22	-	-
B737-500	CFM56-3C1	3	-	-
A321-100/200	IAE V2530-A5	9	9	-
A330		-	6	-
Asian Spirit (Philippines)				
B737		3	-	-
YS-11A	RR Dart 543-10	4	-	-



LET 410	Walter M601E-21	2	-	1
CASA CN235		2	-	-

Australian Airlines

B767-300ER	CF6-80C2B6	4	2	-
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Bangkok Airways (Thailand)

ATR72-500/200/210	PWC PW124B/127/F	9	-	-
<i>Leased in: 9</i>				

B717-200		4	-	-
<i>Leased in: 2</i>				

Berjaya Air (Malaysia)

BN-2 Islander	Lyc IO-540 KIB5	1	-	-
Y-12	PWC PT6A-27	1	-	-
Challenger 601-3R	GE CF34-3A1	1	-	-
DHC-7	PWC PT6A-50	2	-	-

Biman Bangladesh Airlines

DC 10-30	GE CF6-50C2	4	-	-
A310-300	P&W PW4156A	4	-	-
<i>Leased in: 2</i>				

F28-4000	RR Spey 555-15P	1	-	-
BAe ATP	PWC PW126	2	-	-

Bouraq Indonesia Airlines

B737-200	P&W JT8D-15	6	-	-
<i>Leased in:</i>				

HS 748-2A	RR Dart 534-2	3	-	-
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HS 748-2B	RR Dart 536-2	1	-	-
IPTN 212-100		3	-	-
IPTN N250		-	5	-

Cathay Pacific Airways

B747-400	RR RB211-524G/H	19	-	-
<i>Leased in: 17</i>				

B747-400F	RR RB211-524G2	5	-	-
<i>Leased in: 1</i>				

Airline/Aircraft	Engines	In Service		
		Mar 31, 03	On Order	Options
B747-200F	RR RB211-524D4	6	-	-
<i>Leased in: 1</i>				
B777-200	RR Trent 800	5	-	-
<i>Leased in: 4</i>				
B777-300	RR Trent800	7	3 (2003-04)	-
<i>Leased in: 7</i>				
A340-600	RR Trent 500	2	1 (2003)	-
A340-300	CFM56-5C4	15	-	-
<i>Leased in: 15</i>				
A330-300	RR Trent 772	20	3 (2003-04)	-
<i>Leased in: 18</i>				

Cebu Pacific Air (Philippines)

DC-9-41	P&W JT8D-9A/7B	10	-	-
<i>Leased in: 10</i>				

China Airlines (Taiwan)

B747-400	P&W PW4056	13	6	-
<i>Leased in: 9</i>				

B747-400F	GE CF6-80C2B1F/5F	12	7	-
<i>Leased in: 2</i>				

B747-200F	P&W JT9D-7A/7Q/7R4G2/	2	-	-
<i>Leased in: 1</i>				

B737-800	CFM56-7B26	11	-	-
<i>Leased in: 5</i>				

A300-600R	P&W PW4158	12	-	-
<i>Leased in: 5</i>				

A340-300	CFM56-5C4	5	1	-
A330-200	PW4168	2	-	-
<i>Leased in: 2</i>				

A330-300		-	12	6
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China Eastern Airlines (Shanghai)

A340-300	CFM56-5C4	5	5	-
A300-600R	GE CF6-80C2A5	11	-	-
<i>Leased in: 3</i>				

A320-200	CFM 56-5B4	15	18	-
<i>Leased in: 4</i>				

A319		10	-	-
B737-700		6	-	-
B737-300		6	-	-
<i>Leased in: 1 SALE</i>				

B737-200		3	-	-
MD-82	P&W JT8D-217A	3	-	-
MD-11	P&W PW4460	3	-	-
MD-11F	P&W PW4460	3	-	-
MD-90		9	-	-

B737-200		3	-	-
MD-82	P&W JT8D-217A/C	23	-	-
A300-600R	P&W PW4158	6	-	-
<i>Leased in: 2 AWAS Leased out 2</i>				

A321		4	6	-
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A300-600R	GE CF6-80C2A5	3	-	-
<i>Leased in: 1 GECAS Leased out: 1</i>				

A310-200	P&W JT9D-7R4E1	3	-	-
<i>Leased in: 3</i>				

A320	CFM56-5B4	15	-	-
<i>Leased in: 2</i>				

BAe 146-100	Lyc ALF 502R-5	3	-	-
<i>Leased in: 1</i>				

BAe 146-300	Lyc LF507-1H	7	-	-
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A320		15	-	-
<i>Leased in: 2</i>				

BAe 146-100	Lyc ALF 502R-5	3	-	-
<i>Leased in: 1</i>				

A320		15	-	-
<i>Leased in: 2</i>				

BAe 146-100	Lyc ALF 502R-5	3	-	-
<i>Leased in: 1</i>				

BAe 146-300	Lyc LF507-1H	7	-	-
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Airline/Aircraft	Engines	In Service Mar 31, 03	On Order	Options
China Southern Airlines (Guangzhou)				
B747-400F		3	-	-
B777-200A/B	GE90-76BG01	9	-	-
<i>Leased in: 8</i>				
B757-200	RR RB211-535E4	18	-	-
<i>Leased in: 15</i>				
B737-300	CFM56-3C	27	-	-
<i>Leased in: 13</i>				
B737-500	CFM56-3C	12	-	-
<i>Leased in: 7</i>				
B737-800	CFM56	6	14	-
A320-200	IAE V2527-A5	20	-	-
<i>Leased in: 10 Leased out: 2</i>				
China Southwest Airlines (Chengdu)				
B757-200	RR RB211-535E4	13	-	-
<i>Leased in: 5 GECAS (3) Leased out: 2</i>				
B737-300	CFM56-3B1/B2	14	-	-
<i>Leased in: 5</i>				
B737-600	CFM56	3	-	-
B737-800	CFM56-7	6	-	-
A340-300		6	-	-
<i>Leased in: 3</i>				
China United Airlines (Beijing)				
B737-300	CFM56-3B1	8	-	-
Tu-154M	Sol D-30KU-154	16	-	-
Il-76M		14	-	-
Canadair CRJ200	GE CF34-A-1A/3A	5	-	-
China Xinhua Airlines (Beijing)				
B737-300	CFM56-3B1/2	6	-	-
<i>Leased in: 1 Bouillion</i>				
B737-400	CFM56-3	3	-	-
<i>Leased in: 3 Bouillion</i>				
China Xinjiang Airlines (Urumqi)				
B737-300	CFM56-3	2	-	-
B737-700	CFM-56	4	-	-
B757-200	RB211-535-E4	9	-	-
<i>Leased in: 3</i>				
IL-86	Hk-86	3	-	-
ATR-72		5	-	-
China Yunnan Airlines (Kunming)				
B737-300	CFM56-3B1/3C1	13	-	-
<i>Leased in: 4 AWAS (3), GECAS (1)</i>				
B737-700	CFM 56	4	-	-
B767-300ER	RR RB524-211	3	-	-
Canadair CRJ200		6	-	-
Dragonair (Hong Kong)				
A320-200	IAE V2500-A1	8	3 (2004-05)	-
<i>Leased in: 6 ILFC</i>				
A321	IAE V2500	4	2 (2003)	-
<i>Leased in: 4</i>				
A330-300	RR Trent 772	9	-	-
<i>Leased in: 4 ILFC</i>				
B747-300F	PW JT9D-7R4G2	3	-	-
Druk-Air (Bhutan)				
BAe 146-100	Lyc ALF502R-5	2	-	-
Eagle Airlines (New Zealand)				
Beechcraft 1900D	P & W PT6A-67D	16	-	-
<i>Leased in: 16</i>				
Elbee Airlines (India)				
F27-200	RR Dart 552-7R	2	-	-

Airline/Aircraft	Engines	In Service Mar 31, 03	On Order	Options
EVA Air (Taiwan)				
B747-400	GE CF6-80C2B1F	5	-	-
B747-400 Combi	GE CF6-80C2B1F	10	-	-
<i>Leased in: 12 of the 15 B747s</i>				
B747-400F	GE CF6-80C2B1F	4	-	-
B767-300ER	GE CF6-80C2B6F	4	-	-
<i>Leased in: 4</i>				
B767-200	GE CF6-80C2B2F	4	-	-
B757	PW2037	2	-	-
MD-11	GE CF6-80C2D1F	3	-	-
<i>Leased in: 1</i>				
MD-11F	GE CF6-80C2D1F	9	-	-
<i>Leased in: 2</i>				
MD-90	V2500-D5	1	-	-
B777-200LR		-	3 (2005-08)	-
B777-300LR		-	4 (2005-08)	8 (-200/-300)
A330-200		-	2 (2003)	-
Everest Air (Nepal)				
Fairchild Dornier 228-100	Gar TPE331-5-252D	3	-	-
<i>Leased in: 1 Danish, 2 Adler Leasing</i>				
Far Eastern Air Transport (Taiwan)				
B757-200	P&W PW2037	7	-	-
MD-82	P&W JT8D-217C/219	4	-	-
MD-83	P&W JT8D-219	5	-	-
<i>Leased in (total) 11 Leased out (total) 3</i>				
				
Freedom Air International (New Zealand)				
B737-300	CFM56-3C1	4	-	-
<i>Leased in: 4</i>				
Garuda Indonesia				
B747-400	GE CF6-80-C2B1F	3	-	-
B747-200	P&W JT7D-7Q	4	-	-
B737-300/400/500	CFM56-3C1	30	-	-
B737-700 NG		-	18	-
B777		-	6	-
DC10-30	GE CF6-50C	5	-	-
A330-300	RR Trent 700	6	-	-
<i>Leased in (total fleet): 26</i>				
Hainan Airlines (Haikou, China)				
B737-300	CFM56-3C1	5	-	-
<i>Leased in: 3 ILFC, 2 Communication Bank of China</i>				
B737-400	CFM56-3C1	7	-	-
<i>Leased in: ILFC</i>				
B737-800	CFM56-7	13	-	-
<i>Leased in:</i>				

Airline/Aircraft	Engines	In Service		
		Mar 31, 03	On Order	Options
B767-300		2	-	-
Fairchild Dornier 328JETS	P&W	19	-	-
Learjet 60	P&W PW305A	1	-	-
Beechjet 400		1	-	-
Raytheon Hawker 800XP		6	-	-
Gulfstream 200		2	1 (2003)	-
Indian Airlines				
A300B4/B2	GE CF6-50C2/C	9	-	-
<i>Leased in: 2</i>				
A320-200	IAE V2500-AI	36	-	-
<i>Leased in: 6</i>				
B737-200	P&W JT8D-17A	11	-	-
Dornier 228-200		2	-	-
Islands Nationair (Papua New Guinea)				
DHC-6-300 Twin Otter	PWC PT6A-27	3	-	-
EMB-110	PWC PT6A-34	3	-	-
J-AIR (Japan)				
BAe Jetstream Super 31	Gar. TPE331-12UHR	3	-	-
<i>Leased in:</i>				
Canadair RJ 200		2	4 (2002-2003)	-
Jagson Airlines (India)				
Fairchild Dornier 228-201	Gar. TPE331-5-252D	3	-	-
JALways				
B747-300	JT9D-7R4G2	1	-	-
<i>Leased in: 1, JAL/JAS</i>				
DC10-40	P&W JT9D-59A	4	-	-
<i>Leased in: 4 Japan Airlines</i>				
Japan Air Commuter				
YS-11A-500	RR Dart 542-10J/K	14	-	-
<i>Leased in: JAS</i>				
Saab 340B	GE CT7-9B	11	-	-



Japan Airlines / Japan Air System combined fleet

B747-400	GE CF6-80C2B1F	42	5	-
<i>Leased in: 15</i>				
B747 Classics	P&W JT9D	32	-	-
<i>Leased out: 6 JAA, JALways</i>				
B747 Freighters	P&W JT9D	10	-	-
B767-300	P&W JT9D-7R4D/GE CF6-80C2B4F	22	-	-
<i>Leased in: 9 Leased out: 3 JAA</i>				
B767-300ER	CF6-80C2B7F	3	5	-
B767-200	P&W JT9D-7R4D	3	-	-
B777-200/ER	P&W PW4077/PW4090	15	10	-
<i>Leased in:</i>				

Airline/Aircraft	Engines	In Service		
		Mar 31, 03	On Order	Options
B777-300	P&W PW4090	5	3	-
B777-300ER	GE90-115B	-	8 (2004-2008)	-
B737	CFM56-3C-1	23	-	-
MD-11	P&W PW4460	6	-	-
MD-90	V2525-D5	16	-	-
MD-81	JT8D-217A/C	18	-	-
MD-87	JT8D-217A/C	8	-	-
A300-600R	PW4158	22	-	-
A300B2/B4	CF6-50C2R	12	-	-
DC 10-40	P&W JT9D-59A	15	-	-
YS-11	RR Dart MK542-10J/K	11	-	-
SAAB 340B	GE CT7-9B	14	-	-
Dash 8-Q400	PW150A	2	-	-
CRJ-200	CF34-3B1	5	1 (2003)	-
JS-31	TPE331-10	1	-	-
Baron 58A Trainer		-	4	-
Bonanza 36B		-	2	-
Japan Asia Airways				
B747-300	P&W JT9D-7R4G2	1	-	-
<i>Leased in: Japan Airlines</i>				
B747-200	P&W JT9D-7A/7Q	3	-	-
<i>Leased in: 3, Japan Airlines</i>				
B767-300	P&W JT9D-59A	1	-	-
<i>Leased in: Japan Airlines</i>				
B767-300	CF6-80C2B4F	2	-	-
<i>Leased in: 2, Japan Airlines</i>				
Japan Express (JEX)				
B737-400	CFM 56-3C1	7	-	-
<i>Leased in: 7, Japan Airlines</i>				
Japan TransOcean Air				
B737-400	CFM56-3C1	15	-	-
<i>Leased in:</i>				
Jet Airways (India)				
B737-400	CFM56-3C1/3B1	8	-	-
<i>Leased in: 4</i>				
B737-700	CFM56-7B22	12	-	-
<i>Leased in: 4</i>				
B737-800	CFM56-7B24	13	-	-
<i>Leased in: 2</i>				
B737-900		-	2	-
EMB 175		-	10	10
ATR 72-500	PWC PW127F	8	-	-
<i>Leased in: 8</i>				
Korean Air				
B747-400	P&W PW4056	26	-	-
B747-400F	P&W PW4056	10	4 (2003-2004)	-
B747-300	P&W JT9D-7R4G2	1	-	-
B747-300F	P&W JT9D-7R4	1	-	-
B747-200F	P&W JT9D-7A/Q/7R4G2	4	-	-
B777-200	P&W PW4090	8	1 (2003)	-
B777-300	P&W PW4090	4	-	-
B737-800	CFM56-7B24	14	-	-
B737-900	CFM56-7B24	7	9 (2003-2004)	3
A330-300	P&W PW4168/A	15	1 (2003)	-
A330-200	P&W PW4168	3	-	-
A300-600R	P&W PW4158	12	-	-
<i>Leased in: 3</i>				
MD-11F	P&W PW4460	4	-	-
Fokker 100	RR Tay 650-15	10	-	-
<i>Leased in: 2</i>				

Airline/Aircraft	Engines	In Service		
		Mar 31, 03	On Order	Options



Lao Aviation

An 24RV	Ivchenko AI-24	1	-	-
ATR72-200	P&W PW127	2	-	-
Y-7-100C3	WJ5A-1	3	-	-
<i>Leased in: XAC</i>				

Malaysia Airlines

B747-400	P&W PW4056/GE CF6-80C2	19	2	-
<i>Leased in: 7</i>				
B747-200F	RR RB211-524D4	2	-	-
B777-200	RR Trent 890B	15	2	-
<i>Leased in: 13</i>				
B737-400	CFM56-3C1	39	-	-
<i>Leased in: 4</i>				
B737-700BBJ	CFM56-7B26	1	-	-
A330-300	P&W PW4168	9	-	-
Fokker 50	PWC PW125B	10	-	-
DHC	PT6A-27	6	-	-

Mandala Airlines (Indonesia)

B737-200	P&W JT8D-15/17	7	-	-
<i>Leased in: 7. GECAS (3), PT. Pann (2), Sub lease from Transmile (2)</i>				

Mandarin Airlines

B737-800	CFM56-7B26	3	-	-
Saab 340	GE CT7-9B	2	-	-
Fokker 50	P&W PW125B	7	-	-
Fokker 100	RR Tay 65-15	2	-	-
Fairchild Dornier 228-212	Gar TPE331-5A-252D	4	-	-

Mekong Airlines (Cambodia)

B737-500		1	-	-
<i>Leased in: ILFC</i>				

Merpati Nusantara Airlines (Indonesia)

B737-200	P&W JT8D-15	7	-	-
Fokker 100	RR Tay 650-15	3	-	-
F28-4000	RR Spey 555-15H	9	-	-
F27-500	RR Dart 532/6-7	6	-	-
CASA 212	Gar. TPE 331-10-511	4	-	-
Twin Otters		6	-	-

Mount Cook Airline (New Zealand)

ATR 72-500	PWC PW127	7	1	-
<i>Leased in: 7, Air New Zealand</i>				

MIAT Mongolian Airlines

B727-200	P&W JT8D-9A/17	2	-	-
A310		1	-	-
Y-12	PWC PT6-27	5	-	-
An-24	Ivchenko AI-24	11	-	-
An-26	Ivchenko AI-24BT	3	-	-

Airline/Aircraft	Engines	In Service		
		Mar 31, 03	On Order	Options

An-30	Ivchenko AI-24BT	1	-	-
Mi-8	TVD-117A	3	-	-

Myanmar Airways

F28-4000	RR Spey 555-15P	2	-	-
F28-1000	RR Spey 555-15	1	-	-
F27-600	RR Dart 532-7	3	-	-
F27-400	RR Dart 532-7	1	-	-
F27-100	RR Dart 514-7	1	-	-

Necon Air (Nepal)

HS748	RR Dart 533/6-2	3	-	-
ATR-42		1	-	-

National Jet (Australia)

BAe RJ70		2	-	-
DHC 8 100/200/300		5	-	-
BAe Jetstream J32		1	-	-

Nippon Cargo Airlines (Japan)

B747-200F	GE CF6-50E2	7	-	-
<i>Leased in: 2</i>				
B747-100SRF	GE CF6-50E2	1	-	-

Pacific Airlines (Vietnam)

A321		2	-	-
A300		1	-	-
B737		1	-	-
MD83		1	-	-

Pakistan International Airlines

B747-200	P&W JT9D-7A	6	-	-
B747-200 Combi	GE CF6-50E2	2	-	-
B747-300	RR RB211-524C2	5	-	-
<i>Leased in: 5 Cathay Pacific</i>				
B737-300	CFM56-3B1	7	-	-
A300-B4	GE CF6-50C2	9	-	-
<i>Leased in: 2</i>				

A310-300	GE CF6-80C2A8	6	-	-
F27-200/400	RR Dart 532-7	12	-	-
DHC-6-300	PWC PT6A-27	2	-	-

P.B. Air (Thailand)

EMB 145		2	-	-
EMB 170		-	3 (2003)	-

Pelangi Air (Malaysia)

Fokker 50	PWC PW125B	2	-	-
Fairchild Dornier 228-202	Gar. TPE331-5-252	3	-	-

Pelita Air Service (Indonesia)

Fokker 100	RR Tay 650-15	1	-	-
<i>Leased in: GECAS</i>				

Fokker 70	RR Tay 620-15	1	-	-
F28-4000	RR Spey 555-15P	4	-	-
<i>Leased in: 1 GECAS</i>				

DHC-7-103	PWC PT6A-50	6	-	-
CASA C212-100	Garrett TPE331-511C	4	-	-
BAe 146-200	Lyc ALF502-R5	1	-	-
CASA 212-200		8	-	-

Philippine Airlines

B747-400	GE CF6-80C2B1F	4	-	-
<i>Leased in: 4</i>				

B737-300	CFM56-3B1/3B2/3C1	7	-	-
<i>Leased in: 6</i>				

B737-400	CFM56-3B1/3B2/3C1	3	-	-
<i>Leased in: 3</i>				

A340-300	CFM56-5C	4	-	-
<i>Leased in: 4</i>				

Airline/Aircraft	Engines	In Service Mar 31, 03	On Order	Options
A330-300 <i>Leased in: 8</i>	CF6-80E1A2	8	-	-
A320-200 <i>Leased in: 3</i>	CFM56-5B4P	3	-	-
Phuket Air (Thailand)				
B737-300		3	-	-
YS-11		1	-	-
Polynesian Airlines (Western Samoa)				
B737-300	CFM56-3C1	1	-	-
B737-800	CFM56-7B	1	1	-
DHC-6-300	PWC PT6A-27	2	-	-
BN-2A Islander	Lyc O-540-E4C5	1	-	-
Qantas Airways				
(including subsidiaries Qantas Link, Eastern Australia Airlines, Southern Australia Airlines & Qantas New Zealand)				
B747-400 <i>Leased in: 1 (British Airways)</i>	RR RB211-524G	28	-	-
B747-400ER	CF6-80C2B5F	2	6 (2003-2006)	-
B747-300	RR RB211-524D4U	6	-	-
B767-300/ER <i>Leased in: 3</i>	RR211-524H/GE CF6-80C2B6	25	-	-
B767-200/ER RR211-524H/GE	CF6-80C2B6	7	-	-
B737-300	CFM56-3C1	17	-	-
B737-400 <i>Leased in:</i>	CFM56-3C1	22	-	-
B737-800	CFM56	15	4	-
B717-200	BRW715	14	-	-
A380	RR Trent 900	-	12 (2006-2011)	-
A330-200	CF6-80E1	3	4 (2003-2005)	-
A330-300	CF6-80E1	-	6 (2003-2005)	-
BAe146-300/200/100	ALF502R-5	15	-	-
DHC-8-300/200/100	PW150/PW123/PW120A	32	-	-
Regional Express, Australia (REX)				
(formerly Hazelton and Kendell Airlines)				
Saab 340	GE CT7	21	-	-
Fairchild Metro 23s	TPE 331-12	7	-	-
Royal Brunei Airlines				
B757-200ER <i>Leased out: 1</i>	RR RB211-535-E4	2	-	-
B767-300ER	P&W PW4056	6	-	-
B767-300ER	GE CF6-80C2	2	-	-
A319	V2524-A5	-	2 (2003)	-
Royal Nepal Airlines				
B757-200/C	RR RB211-535E4	2	-	-
DHC-6-300	PWC PT6A-27	8	-	-
Pilatus PC6-B2H4	PWC PT6A-27	1	-	-
Ryukyu Air Commuter (Japan)				
DHC-8-100		2	2	-
DHC-6-300 <i>Leased in: 4 Japan TransOcean</i>	PWC PT6A-27	4	-	-
Sabang Merauke Raya Air Charter (Indonesia)				
C-212-100	Garrett TPE331-5-251C	2	-	-
F-27-200 <i>Leased in: 1</i>	RR Dart-7 MK532-7	1	-	-
Piper PA31-350	Lyc TIO-540-J2BD	1	-	-
Shaheen Air (Pakistan)				
B737-400 <i>Leased in:</i>		1	-	-

Airline/Aircraft	Engines	In Service Mar 31, 03	On Order	Options
Shandong Airlines (China)				
B737-300 <i>Leased in: 2</i>	CFM56-3B1/3B2	9	-	-
Saab 340A <i>Leased in:</i>		6	-	-
Canadair RJ200		10	-	-
Canadair RJ700		-	2	-
Cessna Caravan		5	-	30
Bombardier Challenger 604		2	2 (2003)	-
Shanghai Airlines (China)				
B757-200	P&W PW2037	7	-	-
B767-300	P&W PW4056	4	-	-
B737-700 <i>Leased in: 3</i>	CFM56-381	6	-	-
B737-800		5	-	-
Canadair CRJ200		3	-	-
Hawker 800		1	-	-
Shenzhen Airlines (Chengdu)				
B737-300	CFM56-3B1/2/C1	6	-	-
B737-700	CFM56	10	-	-
B737-800	CFM56	2	-	-
Sichuan Airlines (China)				
A320-200 <i>Leased in:</i>	IAE V2527-A5	5	-	-
A321	IAE V2500	2	-	-
EMB 145		5	-	-
Y-7-100	WJ5A-1	5	-	-
SilkAir (Singapore)				
A320-200	V2527-A5	5	5	-
A319-100	V2524-A5	4	2	-
Singapore Airlines				
B747-400	P&W PW4056	38	-	9
B747-400F	P&W PW4056	11	6	-
B777-200	RR Trent 884/892	22	15	22
B777-200ER	RR Trent 892	12	1	-
B777-300	RR Trent 892	8	1	-
A380-100	RR Trent 900	-	10	15
A340-300E	CFM56-5C4	4	2	-
A340-500	RR Trent 553	-	5	5
A310-300	P&W PW4152	9	-	-
Skippers Aviation (Australia)				
DHC-8-100		2	-	-
Emb 120ERJ		1	-	-



Airline/Aircraft	Engines	In Service		
		Mar 31, 03	On Order	Options
Fairchild Metro 23		7	-	-
Cessna 400 Series		8	-	-
Skymark Airlines (Japan)				
B767-300ER		2	1	-
Skywest Airlines (Australia)				
Fokker 50	PWC PW125B	5	-	-
Solomon Airlines				
DHC-6-310	PWC PT6A-27/34	2	-	-
DHC-5-310	PWC PT6A-27	1	-	-
BN-2A-8/9 Islander	Lyc O-540-E4C5	2	-	-
Srilankan Airlines				
A340-300	CFM56-5C2	3	-	-
<i>Leased in: 3</i>				
A330	RR Trent 700	4	-	-
<i>Leased in: 4</i>				
A320-231	IAE V2500-A1	2	-	-
<i>Leased in: 2</i>				
Antonov AN12F		1	-	-
Sun Air (Fiji)				
DHC-6-210	PWC PT6A-20	2	-	-
DHC-6-310	PWC PT6A-27	1	-	1
BN-2A Islander	Lyc O-540-E4C5	4	-	-
BE 65	Lyc 10-720	1	-	-
Sunstate Airlines (Queensland, Australia)				
Shorts 360	PWC PT6A-65R	3	-	-
DHC-8-100/200/300	PWC PW120A	7	1	-
Thai Airways International				
B747-400	GE CF6-80C2B1F	16	2	-
<i>Leased in: 2</i>				
B747-300	GE CF6-80C2B1	2	-	-
B777-200	RR Trent 870	8	-	-
<i>Leased in: 4</i>				
B777-300	RR Trent	6	-	-
B737-400	CFM56-3C1	10	-	-
<i>Leased in: 4</i>				
MD-11	GE CF6-80C2D1F	4	-	-
A330-300	P&W PW4164/4167/4168A	12	-	-
<i>Leased in: 3</i>				
A300-600/R	GE CF6/P&W4158	21	-	-
<i>Leased in: 5</i>				
ATR72	PWC PW124	2	-	-
TransAsia Airways (Taiwan)				
A320	IAE V2500-A1	3	-	-
A321-131	IAE V2500-A5	6	-	-
ATR 72	PWC PW124B	10	-	-
Transmile Air Services (Malaysia)				
B737-200	P&W JT8D-9A	2	-	-
<i>Leased in: Leased out: 2</i>				
B737-200F	P&W JT8D-9A	5	-	-
<i>Leased in: 1 Leased out:</i>				
B727-200	P&W JT8D-15	1	-	-
Cessna Grand Caravan I	PWC PT6A-114	2	-	-
Uni Air (Taiwan)				
MD-90-30	IAE V2525-D5	14	-	-
<i>Leased in: 7</i>				
DHC8-100		4	-	-
DHC8-200		1	-	-
DHC8-311	PW 123	14	1	-
Fairchild Dornier 228-212	Garrett TPE 331-5A	2	-	-

Airline/Aircraft	Engines	In Service		
		Mar 31, 03	On Order	Options
BN-2A-26	AVCO Lyc O-540	3	-	-
U-Land Airlines (Taiwan)				
MD-82	P&W JT8D-217C	3	-	-
<i>Leased out: 1 Vietnam's Pacific Airlines</i>				
Vanair (Vanuatu)				
DHC-6-310	PWC PT6A-27	5	-	-
BN-2A Islander	Lyc O-540-4C5	2	-	-



Vietnam Airlines

B777-200ER		-	6 (2003-2005)	-
B767-300ER	CF 6	6	-	-
<i>Leased in: 4</i>				
A320-200	CFM56-5B4	10	-	-
<i>Leased in: 10</i>				
A321		2	5	-
Fokker 70	Tay MK 620-15	2	-	-
ATR 72-202	PWC PW124	8	-	-
<i>Leased in: 2</i>				

Virgin Blue (Australia)

B737-300		1	-	-
B737-400		4	-	-
B737-700		6	-	-
B737-800		5	10 (2003-2004)	-

Wuhan Airlines (China)

B737-300	CFM56	6	-	-
B737-800		2	-	-
<i>Leased in: 3 ILFC</i>				
Y-7-100	WJ5A-1	4	-	-
Y-5	HS 5	2	-	-

Xiamen Airlines (China)

B757-200	RR RB211-535E4	7	-	-
B737-200	P&W JT8D-17A	2	-	-
<i>Leased in: 2 GECAS</i>				
B737-300		4	-	-
B737-500	CFM56-3C1	6	-	-
<i>Leased in: 4 ILFC (2), Braathens (2)</i>				
B737-700	P&W JT8D	7	3	-

Zhejiang Airlines (China)

A320-200	CFM 56-5B4-2	5	-	-
<i>Leased in: 2</i>				
A319		3	-	-
DHC Dash-8-300	PWC PW127	3	-	-
<i>Leased in: 1 AGES</i>				

STATISTICS FOR DECEMBER 2002 AND FULL YEAR

VIETNAM AIRLINES FLIES HIGH IN 2002

Compiled and presented by Kris Lim of the Research and Statistics Department of the Association of Asia Pacific Airlines Secretariat

The Association of Asia Pacific Airlines (AAPA) member carriers' consolidated revenue passenger kilometres (RPKs) and the number of passengers carried (PAX) grew by 15.5% and 13.2% respectively, in December compared to a year earlier.

Seat capacity expressed in available seat kilometres (ASKs) rose 10.2% from December 2001, resulting in a passenger load factor (PLF) of 72.5%, an increase of 3.3 percentage points. At first glance it may appear the growth rate in December was less than that in either October or November, but this is because of the slightly recovered base figure in December 2001.

With the exception of Garuda (GA), all member airlines reported growth in RPKs in December. The negative growth posted by Garuda was not surprising as the carrier temporarily suspended a number of flights to Australia, Japan, Korea, London and Frankfurt after the Bali bombing in October. With tourists visiting Bali again on the rise, Garuda will resume



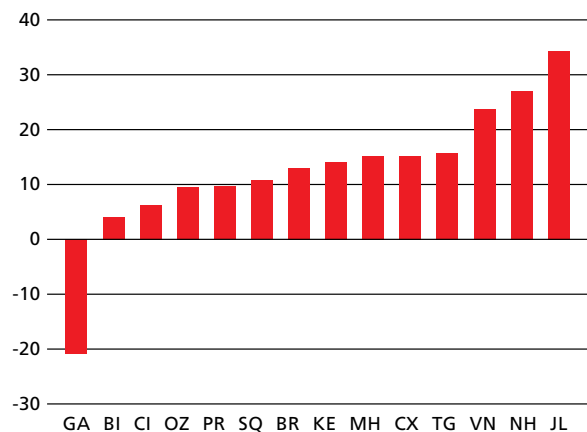
Cathay Pacific Airways: topped the AAPA carriers' list with a PLF of 77.5% in December

cancelled services progressively in March, April and June.

The majority of the carriers reported an increase in load factor in the month under review as RPK growth remained

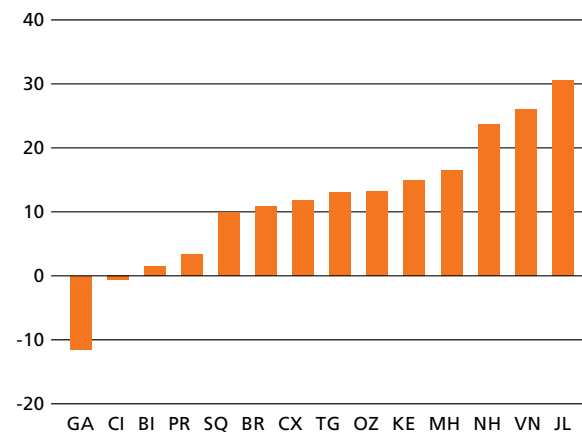
RPK GROWTH BY CARRIER

Percentage (Dec 02 vs Dec 01)



PAX GROWTH BY CARRIER

Percentage (Dec 02 vs Dec 01)



ROLLS-ROYCE NEWS DIGEST

"Rolls-Royce has signed a £100 million maintenance contract with Dragonair for the Trent 700 engines powering the airline's Airbus A330 fleet."



Rolls-Royce



ahead of capacity expansion. Cathay Pacific Airways (CX – 77.5%) had the highest load factor, followed by Singapore Airlines (SQ – 76.2%), China Airlines (CI – 73.7%) and All Nippon Airways (NH – 73.2%).

CARGO

AAPA consolidated freight traffic expressed in freight tonne kilometres (FTKs) rose 11.2% in December, with capacity growth (11.0%) following closely behind. This resulted in a marginal increase in freight load factor (FLF) to 66.5%.

The majority of the member airlines continued to report robust growth in FTKs in December, led by Malaysia Airlines (MH) up 26.1% and Cathay Pacific Airways (19.8%). Only Malaysia Airlines (12.4 percentage points) showed a substantial improvement in FLF over the same month last year. The carriers with the highest FLF, however, were China Airlines (74.8%), Asiana Airlines (OZ – 74.5%) and Korean Air (KE – 73.6%).



Malaysia Airlines: robust cargo traffic in December, highest freight growth rate in 2002 among AAPA carriers

RESULTS OF THE FOURTH QUARTER (OCTOBER TO DECEMBER 2002)

PASSENGER

AAPA consolidated RPKs and the number of passengers carried in the fourth quarter of 2002 increased 23.8% and 20.5% respectively, albeit from a low base. Overall capacity rose 10.2% from the same quarter in the previous year, which resulted in a load factor of 72.2%, up 7.9 percentage points.

Japan Airlines (JL) and All Nippon Airways which had increases of 48.7% and 47.1% respectively – the two airlines most affected by the September 11 events in 2001 – registered the biggest increase in RPKs in this quarter. Load factor for the Japanese carriers also improved markedly as traffic growth outpaced capacity expansion. Cathay Pacific Airways (75.6%) reported the highest load factor in the fourth quarter.

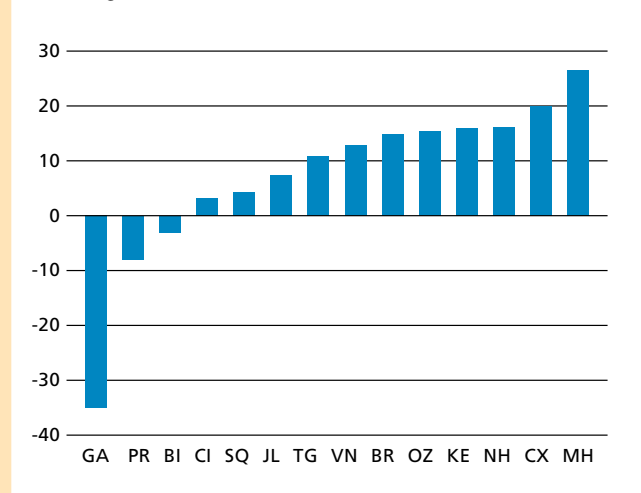
CARGO

Consolidated FTKs for AAPA carriers rose 18.9% in the fourth quarter. Capacity was up 13.2% year-on-year (YOY). PLF improved 3.4 percentage points to 71.4%.

With the exception of Garuda Indonesia and Philippine Airlines, all carriers managed to report FTK double-digit growth this quarter. Malaysia Airlines (14.4 percentage points)

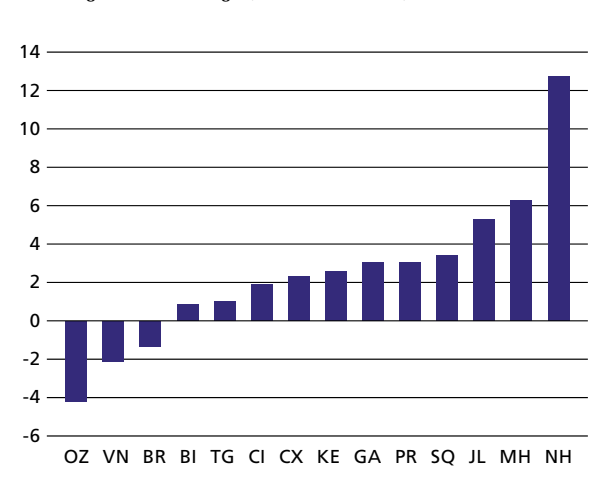
FTK GROWTH BY CARRIER

Percentage (Dec 02 vs Dec 01)



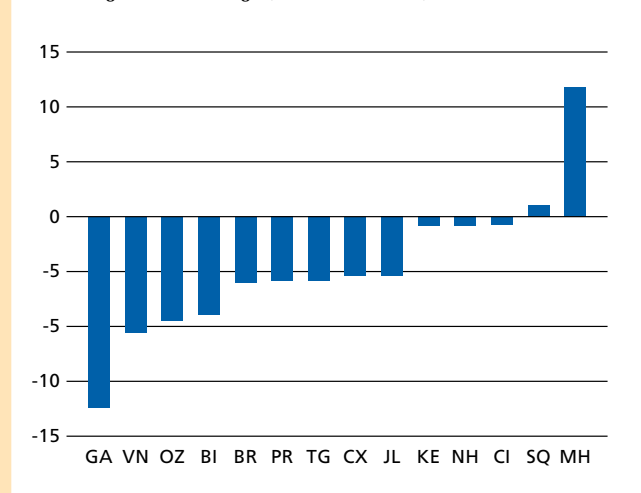
PASSENGER LOAD FACTOR GROWTH BY CARRIER

Percentage Points Change (Dec 02 vs Dec 01)



FREIGHT LOAD FACTOR GROWTH BY CARRIER

Percentage Points Change (Dec 02 vs Dec 01)





Vietnam Airlines: was the top performing AAPA passenger carrier with double-digit RPK and PAX growth in 2002

registered the biggest increase in FLF while China Airlines had the highest load factor (80.6%).

RESULTS OF THE 12 MONTHS TO DECEMBER 31, 2002

PASSENGER

For all of 2002, preliminary AAPA consolidated RPKs grew 5.5% over 2001. The number of PAX rose to 109.6 million, an increase of 6.6%, from 102.8 million a year earlier. Capacity was up marginally (0.7%) which resulted in a load factor of 74.6%, a level comparable to the decade-old record of 74.9% reported in 2000.

It is encouraging that 12 carriers reported growth in RPKs this year over 2001. Most significantly, 10 of the 12 airlines also

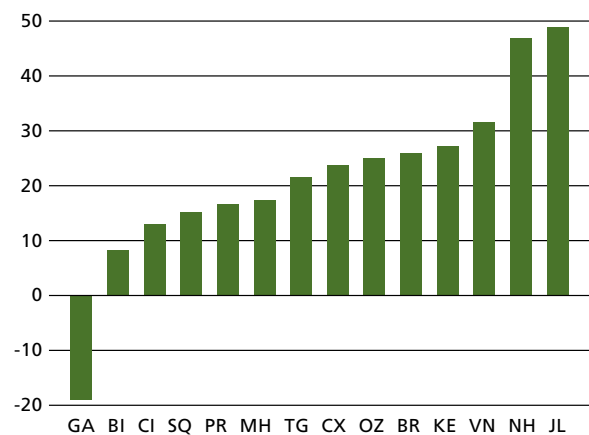
had flown more passenger-kilometres than in 2000. Japan Airlines and Malaysia Airlines showed RPK growth in 2002 over 2001, but they did not reach the level achieved in 2000.

Vietnam Airlines (VN) ended another highly successful year with double-digit growth in both RPKs (18.9%) and PAX (19.7%). Asiana Airlines (RPKs 12.5% and PAX 18.3%) and Thai Airways International (TG – RPKs 11.0% and PAX 10.3%) were next in the league table of highest growth in passenger traffic in 2002. On the other hand, Garuda Indonesia and All Nippon Airways reported negative growth in 2002.

With the exception of Royal Brunei Airlines (BI) and Garuda Indonesia, load factors of all carriers showed improvements in 2002 when compared to the previous year. Eleven carriers reported PLFs above 70%. Cathay Pacific Airways (77.8%) and EVA Air (BR – 77.6%) recorded the best load factors of the year.

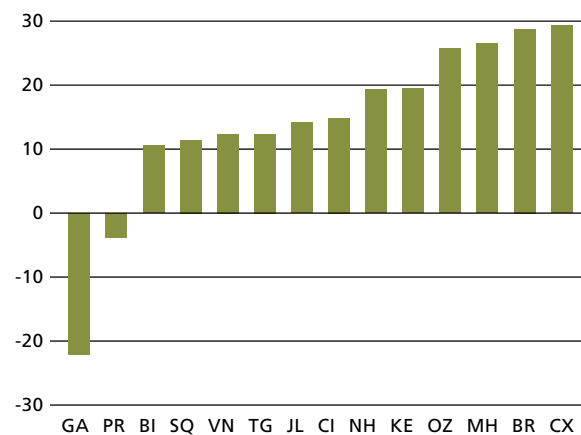
RPK GROWTH BY CARRIER

Percentage (Oct 02 - Dec 02 vs Oct 01 - Dec 01)



FTK GROWTH BY CARRIER

Percentage (Oct 02 - Dec 02 vs Oct 01 - Dec 01)





CARGO

FTKs posted impressive growth of 14.3% for 2002. Capacity rose only 6.6%, enabling the freight load factor to rise to 69.0%, against 64.3% in 2001.

Strong cargo business allowed eight member airlines to register double-digit FTK expansion in the year under review. EVA Air (25.9%) reported the highest growth rate among AAPA members. Other key airfreight players also enjoyed robust growth: Cathay Pacific Airways (23.3%), Asiana Airlines (17.7%), Singapore Airlines (15.5%) and China Airlines (13.9%). FTK records were set by a number of carriers, notably Cathay Pacific Airways and Singapore Airlines.

Emerging from a lacklustre year of trade in 2001, the surprisingly bullish and sustained demand for airfreight throughout 2002 enabled virtually all carriers to post an improvement in FLF, despite more capacity being present in the market.

Singapore Airlines, Korean Air, Cathay Pacific Airways, China Airlines, Japan Airlines and EVA Air reported an improvement in load factor which ranged from 0.4 percentage points to 6.0 percentage points. Asiana Airlines (80.0%) posted the highest load factor of the year among AAPA airlines. Four carriers – Cathay Pacific Airways, China Airlines, EVA Air and Korean Air – ended the year with a load factor in the 70% range. ■

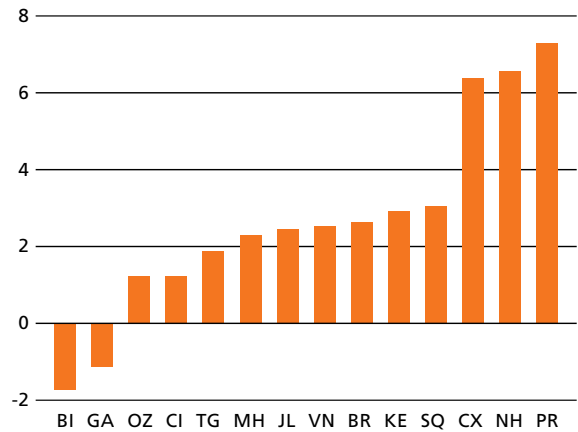
E-mail: krislim@aapa.org.my



EVA Air: highest airfreight growth in 2002 among AAPA

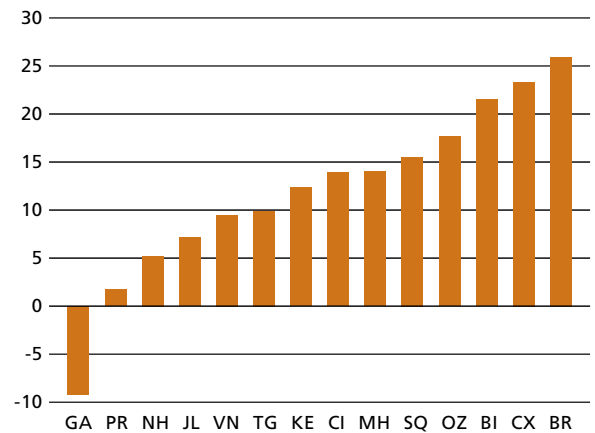
PASSENGER LOAD FACTOR GROWTH BY CARRIER

Percentage Points Change (Jan 02 - Dec 02 vs Jan 01 - Dec 01)



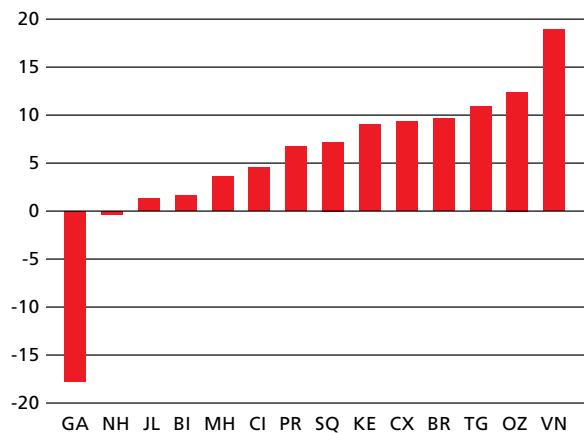
FTK GROWTH BY CARRIER

Percentage (Jan 02 - Dec 02 vs Jan 01 - Dec 01)



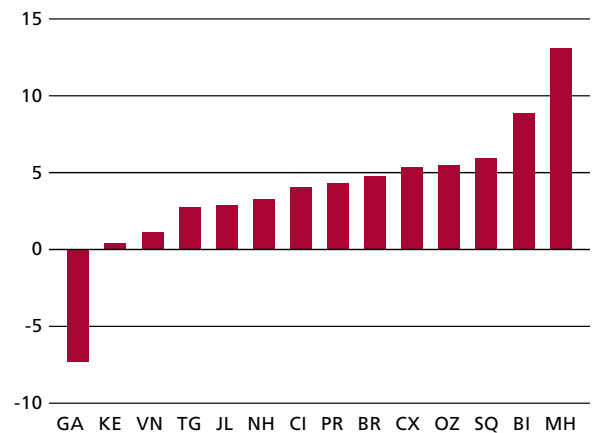
RPK GROWTH BY CARRIER

Percentage (Jan 02 - Dec 02 vs Jan 01 - Dec 01)



FREIGHT LOAD FACTOR GROWTH BY CARRIER

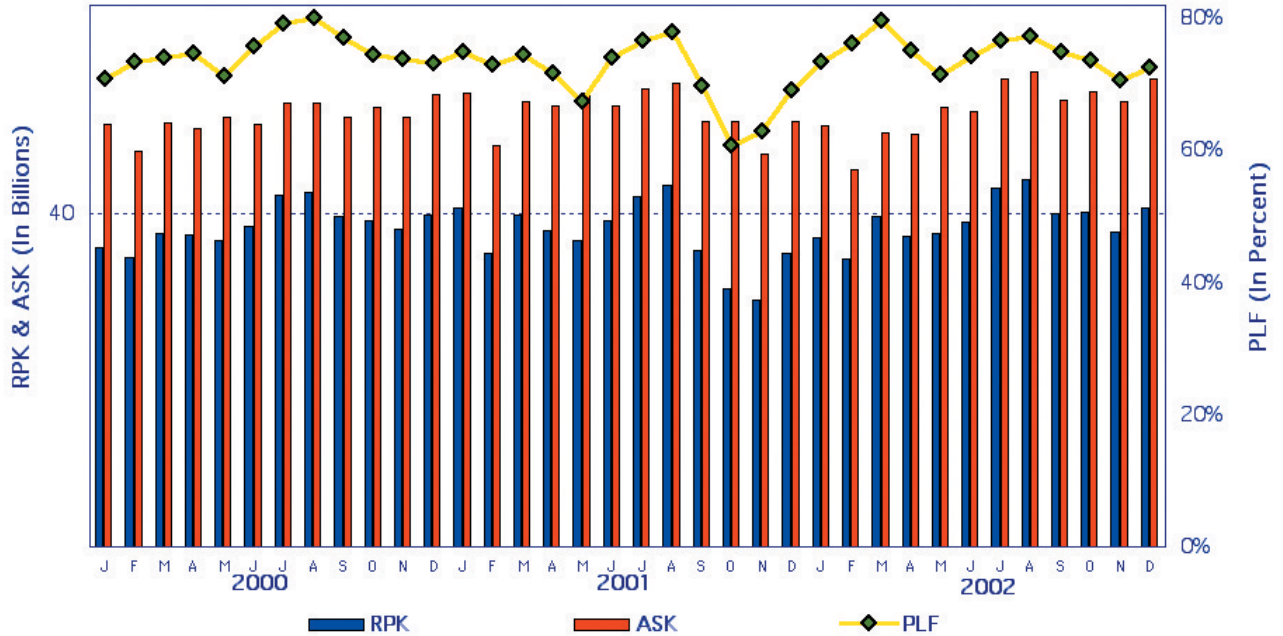
Percentage Points Change (Jan 02 - Dec 02 vs Jan 01 - Dec 01)



MONTHLY INTERNATIONAL PAX STATISTICS OF AAPA MEMBERS

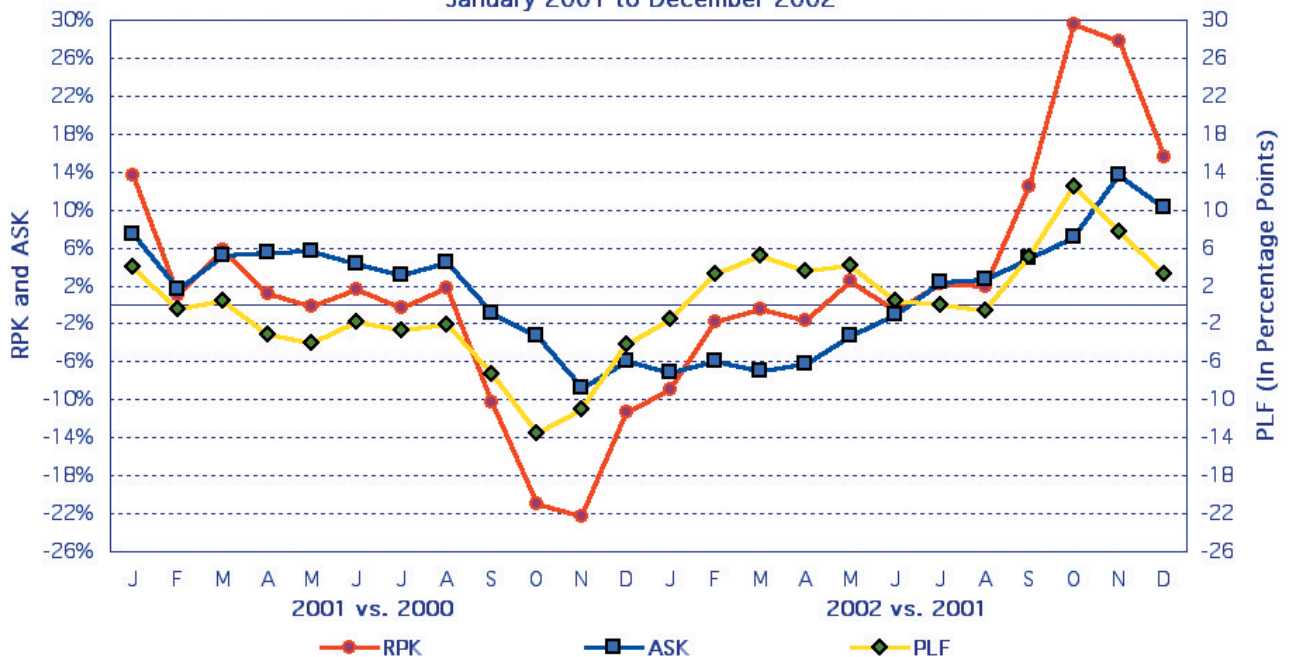
RPK, ASK, AND PASSENGER LOAD FACTOR

January 2000 to December 2002



RPK, ASK, and PLF Growth Rates

January 2001 to December 2002

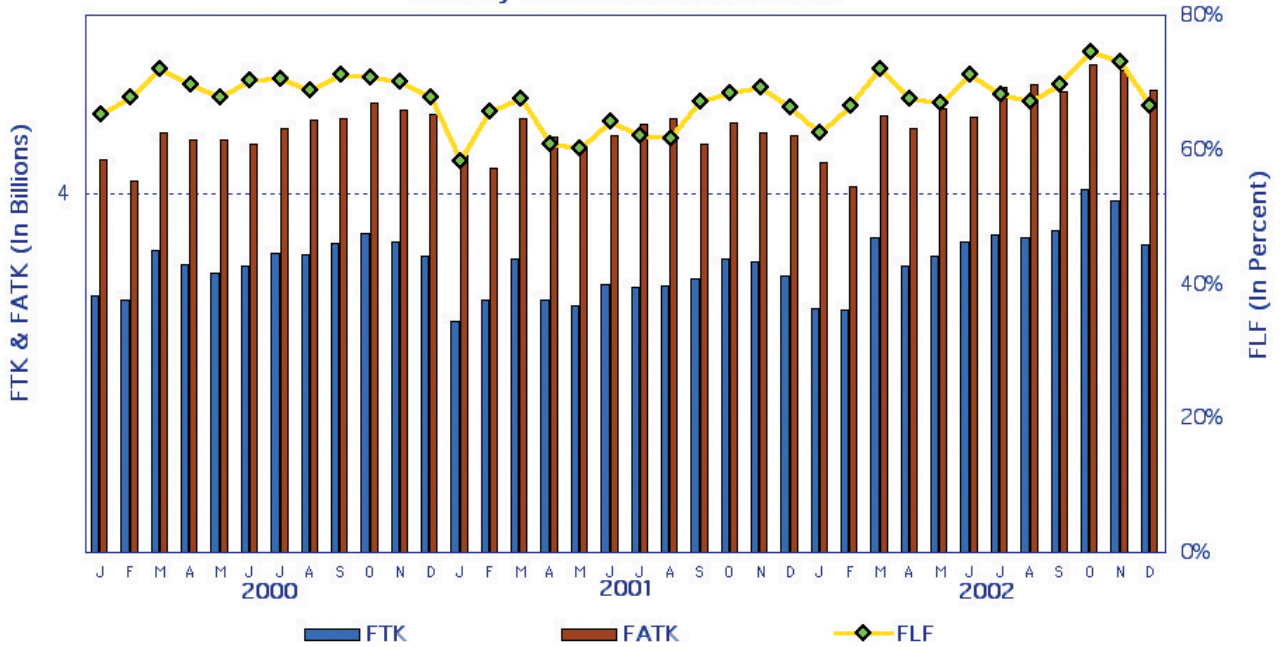


3,096.67	30.77	▲	1.1%
2,649.21	33.29	▲	0.9%
987.90	2.93	▲	0.9%
10,711.54	96.03	▲	0.9%
1,267.10	13.26	▲	0.9%
6,766.42	1.70	▲	0.7%
1,111	0.80	▼	0.7%

MONTHLY INTERNATIONAL CARGO STATISTICS OF AAPA MEMBERS

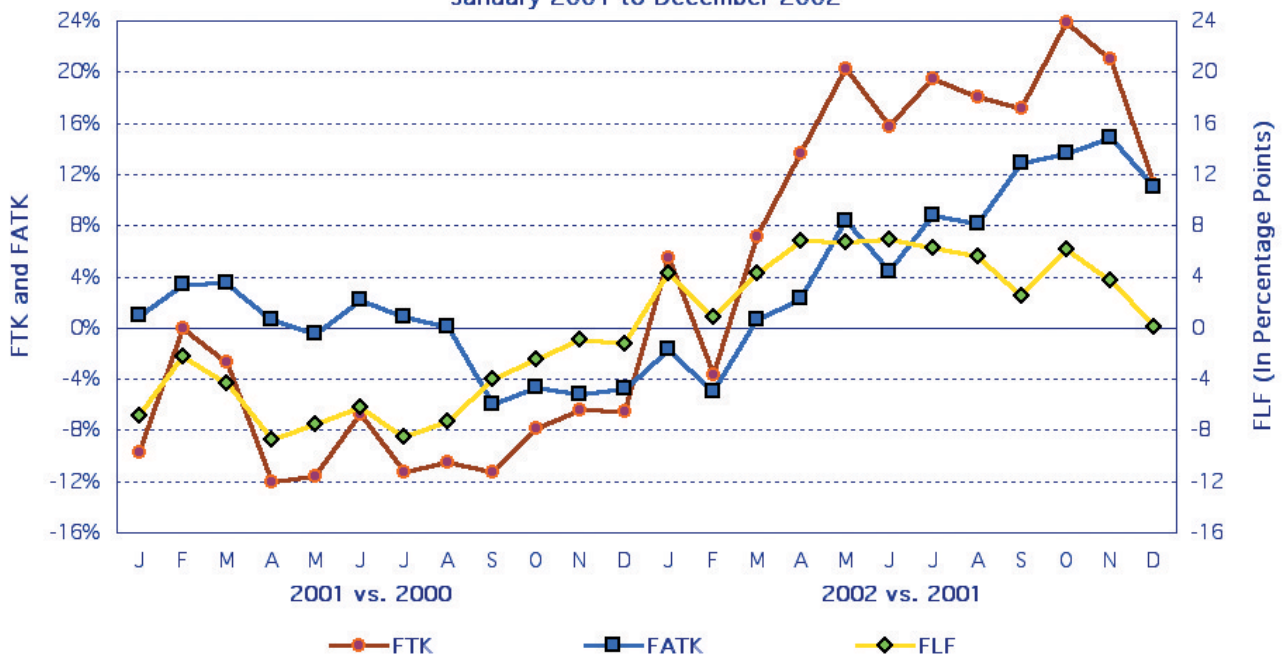
FTK, FATK, AND FREIGHT LOAD FACTOR

January 2000 to December 2002



FTK, FATK, and FLF Growth Rates

January 2001 to December 2002





AAPA MONTHLY INTERNATIONAL STATISTICS SUMMARY OF CONSOLIDATED RESULTS IN THOUSANDS

2002

	RPK (000)	ASK (000)	PLF %	FTK (000)	FATK (000)	FLF %	RTK (000)	ATK (000)	PAX (000)
JAN-02	37,126,908	50,541,963	73.46	2,723,224	4,352,161	62.57	6,215,154	8,960,696	8,481
FEB-02	34,506,659	45,314,221	76.15	2,714,321	4,081,188	66.51	6,343,335	7,842,815	8,298
MAR-02	39,611,128	49,729,631	79.65	3,512,735	4,881,714	71.96	7,247,896	9,438,779	9,350
APR-02	37,255,496	49,573,917	75.15	3,203,656	4,738,718	67.61	6,688,035	9,267,518	8,872
MAY-02	37,650,015	52,692,923	71.45	3,315,590	4,960,585	66.84	6,856,231	9,740,280	8,824
JUN-02	38,886,391	52,282,994	74.38	3,459,836	4,859,617	71.20	7,121,377	9,635,831	8,761
JUL-02	43,053,295	56,186,324	76.63	3,540,061	5,191,938	68.18	7,579,883	10,324,348	9,807
AUG-02	44,119,032	57,033,266	77.36	3,515,664	5,231,860	67.20	7,652,749	10,527,528	10,210
SEP-02	40,065,129	53,543,048	74.83	3,587,644	5,143,415	69.75	7,342,205	10,121,091	9,161
OCT-02	40,155,456	54,600,437	73.54	4,059,736	5,445,443	74.55	7,825,608	10,526,613	9,432
NOV-02	37,774,160	53,457,660	70.66	3,926,791	5,383,582	72.94	7,523,442	10,347,851	8,882
DEC-02	40,745,843	56,230,578	72.46	3,437,056	5,168,823	66.50	7,236,310	10,383,910	9,488
TOTAL	470,949,513	631,186,961	74.61	40,996,315	59,439,043	68.97	85,632,225	117,117,259	109,566

2002

	RPK %	ASK %	PLF	FTK %	FATK %	FLF	RTK %	ATK %	PAX %
JAN-02	-8.89	-7.12	-1.42	5.50	-1.72	4.28	-2.94	-4.93	-6.32
FEB-02	-1.81	-5.98	3.23	-3.70	-4.95	0.86	3.59	-9.86	3.58
MAR-02	-0.52	-6.98	5.18	7.09	0.68	4.31	3.19	-2.95	3.00
APR-02	-1.65	-6.26	3.53	13.62	2.27	6.76	4.85	-1.99	1.82
MAY-02	2.58	-3.31	4.10	20.27	8.30	6.65	10.24	2.04	4.03
JUN-02	-0.56	-1.11	0.41	15.75	4.41	6.97	6.83	1.64	-0.93
JUL-02	2.25	2.33	-0.06	19.51	8.75	6.26	9.70	5.46	3.51
AUG-02	1.85	2.65	-0.61	18.04	8.13	5.62	8.84	6.26	3.92
SEP-02	12.54	4.91	5.00	17.20	12.90	2.57	14.60	9.89	11.32
OCT-02	29.50	7.11	12.44	23.87	13.59	6.17	27.22	11.53	26.17
NOV-02	27.76	13.62	7.70	21.05	14.90	3.69	25.85	15.30	23.17
DEC-02	15.53	10.21	3.30	11.23	11.03	0.12	14.02	11.56	13.17
GROWTH	5.53	0.69	3.43	14.33	6.63	4.64	10.30	3.68	6.60

CALENDAR YEAR⁴

	RPK (000)	ASK (000)	PLF %	FTK (000)	FATK (000)	FLF %	RTK (000)	ATK (000)	PAX (000)
1997	387,763,016	561,392,742	69.07	31,741,381	45,688,853	69.47	67,739,088	96,736,079	88,696
1998	382,106,292	557,130,177	68.58	30,958,021	46,204,321	67.00	66,141,448	97,199,731	86,198
1999	416,820,106	576,253,703	72.33	35,277,459	51,519,550	68.47	74,179,615	104,437,440	94,242
2000	462,466,095	617,787,854	74.86	39,020,611	56,255,588	69.36	82,533,153	112,874,721	103,527
2001	446,262,043	626,881,408	71.19	35,858,596	55,742,084	64.33	77,638,545	112,962,219	102,778
2002	470,949,513	631,186,961	74.61	40,996,315	59,439,043	68.97	85,632,225	117,117,259	109,566

CALENDAR YEAR⁵

	RPK %	ASK %	PLF	FTK %	FATK %	FLF	RTK %	ATK %	PAX %
1998	-1.46	-0.76	-0.49	-2.47	1.13	-2.47	-2.36	0.48	-2.82
1999	9.08	3.43	3.75	13.95	11.50	1.47	12.15	7.45	9.33
2000	10.95	7.21	2.53	10.61	9.19	0.89	11.26	8.08	9.85
2001	-3.50	1.47	-3.67	-8.10	-0.91	-5.03	-5.93	0.08	-0.73
2002	5.53	0.69	3.43	14.33	6.63	4.64	10.30	3.68	6.60

Note:

1. The consolidation includes 15 participating airlines. Consolidated results for JAN - DEC 2002 are subject to revision.
2. KA and NZ do not participate in this report.
3. AN data from JUL 1998 to JUN 2001 only. VN data from JAN 1998 onwards.
4. CY denotes Calendar Year (January - December): JAN - DEC 2002.
5. YTD comparison: JAN - DEC 2002 v JAN - DEC 2001.