



# 飛行標準及適航 FLIGHT STANDARDS AND AIRWORTHINESS

飛行標準及適航部的主要工作是監察航空營運許可證持有人是否遵守飛機適航和操作的既定標準，及確保香港的標準附合國際水平。其他工作包括簽發航空人員執照，分析安全數據，監察在香港登記的飛機之適航情況及維修水平，監察輕型飛機及直升機運作，和調查航空意外及事故。

年內，民航處的安全監督職能接受了審核。國際民航組織審查小組於十一月到訪香港，全面審核本處有關人員執照的頒發、航空器的運行和適航性的安全監察工作。小組成員非常滿意民航處安全監督程序的水平。另一方面，為了配合本地航空公司增辦培訓課程以提高每年畢業的飛行學員數目，本處調撥了所需人手和資源，於二零零零年年初推出

CAD 509 許可審定計劃，並在同年六月准予澳洲阿德萊德一所飛行訓練學校為國泰航空和港龍航空培訓飛行學員。該校是香港以外首間獲本處按 CAD 509 規定而准予培訓香港商用飛行員的學校。隨着本港航空界持續擴展業務，本部來年將會非常忙碌，確保各項規管要求和安全標準獲得遵行。

## I. 航空營運督察組

在報告年度初期，本港共有六間持有香港航空營運許可證的公司，另本部現正審核瑞士蘇黎世 Jet Aviation 公司營運Bombardier Global Express (此為一長程商用噴射機) 的申請。民航處適航主任及航空營運督察現正在設於加拿大蒙特利爾的



# 致力提供安全而有效率的航空運輸系統

COMMITTED TO PROVIDE A **SAFE AND EFFICIENT** AIR TRANSPORT SYSTEM

The Flight Standards and Airworthiness Division is responsible for monitoring compliance with the established aircraft airworthiness and operational standards by holders of Air Operator's Certificate (AOC) and ensuring the standards applied in Hong Kong reflect the current international practices. Other functions of the Division include personnel licensing, safety data analysis, supervision of airworthiness and maintenance standards of aircraft registered in Hong Kong, supervision of light aircraft and helicopter operations, and the investigation of aircraft accidents and incidents.

During the year, the safety oversight functions of CAD were under scrutiny. The International Civil Aviation Organization (ICAO) safety audit team visited Hong Kong in November and conducted a thorough examination on CAD's responsibility to oversee the aviation industry in areas of Personnel Licensing, Aircraft Operation and Airworthiness. The team members were very satisfied with the standard of CAD on safety oversight. Meanwhile, to facilitate local airlines' efforts to increase the annual output of cadet pilots by conducting more training

courses, CAD has put in the necessary manpower and resources to introduce the CAD 509 approval scheme in early 2000. In June 2000, CAD granted approval to a flying training organisation in Adelaide, Australia, to conduct flying training for the cadet pilots of Cathay Pacific and Dragonair. This is the first flying school outside Hong Kong to obtain the CAD 509 approval to conduct flying training of commercial pilots. With the increased activities of the local aviation industry, the Division will be heavily occupied in the coming year in ensuring the required regulatory requirements and safety standards are met.



適航主任視察外勤維修服務。  
Airworthiness officer monitoring the line maintenance services.



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Bombardier總部接受訓練。六間持有香港航空營運許可證的公司是：

- 國泰航空有限公司
- 港龍航空有限公司
- 香港華民航空有限公司
- 直升機服務(香港)有限公司
- 邁持捷出租飛機有限公司
- 港聯直升機有限公司

邁持捷出租飛機有限公司機隊加添了一架 Gulfstream IV，該飛機現已抵港。

年內，本部繼續監察持有香港航空營運許可證公司的運作。航空營運督察和高級航空安全事務主任共檢查了25個外站。航空營運督察並且針對有關飛行、航務人員訓練及營運紀錄方面的事務巡查了共187次。本港航空公司所使用的飛行模擬器共有17台，按照每年的審查程序，這些模擬器在年內通過了評審和檢查而再次獲得認可使用。與此同時，本部透過有限度無預先通知的停機坪巡查，確保海外航空公司於香港國際機場的運作符合國際標準。此類巡查在年內共進行了九次。

國泰航空公司年內訂購了11架飛機(計有九架空中巴士及兩架波音飛機)。這些飛機將於二零零一年稍後投入服務。

為配合貨運業務發展，港龍航空公司濕租了兩架波音747貨機，後又再訂購多兩架同類型貨機。該批貨機將於二零零一年年中投入服務。

本部亦繼續監察政府飛行服務隊內直升機和定翼機的運作。年內，政府飛行服務隊策劃引進新直升機以大為提升其操作能力。三架AS332L2 Super



檢視和評估本地航空公司用作培訓的飛行模擬器。  
Inspection and evaluation of the flight simulator used for training by one of the local airlines.

Puma直升機中的首架預定於二零零一年九月抵港，另外五架EC155直升機將於二零零二年到達。香港兩所商用直升機營運公司(直升機服務(香港)有限公司和港聯直升機有限公司)亦探討在本港境內及來往內地擴展飛行業務的潛力。

因應本港航空業的急速增長，飛行標準部將需要增聘營運督察和其他民航事務主任，以保證航空營運督察組有充裕人手，按照國際民航組織所訂的國際標準和建議措施，定期和有效地監管航空公司的安全運作。本處正招聘合適人選出任有關新職位。

本處主導的飛行工作時間限制工作小組繼續與業界商討改良CAD 371指引文件；CAD 371是一份有關飛行員飛行工作時間限制的參考文件。此外，本處主導的藥物及酒精工作小組已擬備CAD 373「藥物及酒精測試計劃」指引文件的初稿。



## I. FLIGHT OPERATIONS INSPECTORATE

There were six holders of Hong Kong AOC at the beginning of the report period. Application for a new AOC from Jet Aviation of Zurich, Switzerland for the operation of a Bombardier Global Express (long range business jet aircraft) is currently being processed, and a CAD Airworthiness Inspector and Flight Operations Inspector are undergoing training at the Bombardier Headquarters in Montreal, Canada. The six AOC holders were:

- Cathay Pacific Airways Limited (CPA)
- Hong Kong Dragon Airlines Limited (Dragonair) (HDA)
- Air Hong Kong Limited (AHK)
- HeliServices (Hong Kong) Limited (HEL)
- Metrojet Limited
- Helicopters Hong Kong Limited (HHKL)

During the year, Metrojet added a Gulfstream IV aircraft to its AOC and the aircraft is now in Hong Kong.

During the year, the activities of the local AOC holders were monitored through a combined programme of inspections. The Flight Operations Inspectors (FOIs) and Senior Safety Officers conducted a total of 25 station inspections. The FOIs also conducted a total of 187 in-flight, training and operational records inspections. The 17 flight simulators used by the local airlines were evaluated, inspected and re-approved for use in accordance with the annual inspection procedures. To ensure compliance with international standards by foreign airlines using the Hong Kong International Airport (HKIA), the Division conducted nine ad-hoc ramp inspections during the report period.

CPA has ordered an additional 11 aircraft (nine Airbus and two Boeing aircraft). They should be entering service during the latter part of 2001.

HDA has wet leased two B747 freighter aircraft for its new cargo operation. In addition, it has ordered two additional B747 freighter aircraft which are scheduled to commence operation in mid-2001.

The Division also continued to monitor the helicopter and fixed-wing aircraft operations of the Government Flying Service (GFS). In the year, GFS was busy planning for the introduction of its new helicopters which will provide a significant enhancement in its operational capability. The delivery of the first of three Eurocopter AS332L2 Super Pumas is scheduled for September 2001 to be followed by five Eurocopter EC155's in 2002. The commercial helicopter operators in Hong Kong (HHKL and HEL) were also actively exploring new operating opportunities within Hong Kong and to the Mainland.

The significant expansion of the Hong Kong aviation industry will necessitate additional inspectors and operations officers to ensure that the Flight Operations Inspectorate maintains regular and effective safety oversight programmes on the operators' compliance of regulatory requirements in accordance with ICAO standards and recommended practices. Recruitment is in progress to fill these new posts.



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### II. 適航事務組

適航事務組繼續監管所有香港登記飛機的維修及適航水平，以及定期審查在香港、國內和海外的飛行中途站和認可維修機構。適航事務組為香港登記的飛機簽發或更換適航證前，亦分別在西雅圖、土魯斯、香港，或因應所需而在其他地方進行了多次飛機檢查。

本地適航主任人數仍為11名。為配合本港航空業的急速增長，本處在年內增聘本地適航主任。新入職適航主任將接受完善訓練才被委派監管職務。本處亦積極提供培訓予在職適航主任，訓練包括航空意外調查、飛機機種、私人飛機飛行員執照及人為因素課程等。

#### 飛機維修公司許可審定

適航事務組對香港飛機工程有限公司、泛亞太平洋航空服務有限公司及中國飛機服務有限公司作出定期檢查，包括公司審查和機庫及停機坪檢查等。中

國飛機服務有限公司在二零零零年八月開始為港龍航空公司A320/321型客機提供飛行中途站外勤維修服務。

適航事務組又對廈門太古飛機工程有限公司作出定期審查。適航主任經過一連串審查後，在二零零零年九月簽發了A330/340型客機維修許可證予該公司。在二零零零年十月，該公司為第一架A330型客機提供維修檢查服務。

年內有兩間飛機維修及飛機部件維修公司獲得簽發維修許可證。這兩間公司是位於阿布扎比的海灣航空維修公司及香港的邁特捷出租飛機有限公司。

#### 航空公司工程部

國泰航空公司及港龍航空公司年內積極擴充工程部。港龍航空公司獲得本處許可，在上海、北京和高雄飛行中途站進行外勤維修，而國泰航空公司則增設了德里及卡拉奇兩個飛行中途站，以配合機隊擴展。



民航處職員監察本地註冊航機的適航水平。

CAD officer supervising the airworthiness standards of locally registered aircraft.



The Flight Time Limitations (FTL) Working Group, under the Chairmanship of CAD, continued to work with the industry to further refine CAD 371, a reference document on Flight Time Limitations for aircrew. In addition, the first draft of CAD 373 'Alcohol and Drugs Screening Programme' was produced by the Alcohol and Drugs Working Group (ADWG), also under the Chairmanship of CAD.



## II. AIRWORTHINESS OFFICE

The Airworthiness Office continued to monitor the maintenance and airworthiness standards of all Hong Kong registered aircraft. Routine AOC line station audits and approved maintenance organisation audits were carried out in Hong Kong, the Mainland and overseas, while aircraft were surveyed for the issue and renewal of Certificate of Airworthiness for Hong Kong-registered aircraft in Seattle, Toulouse, Hong Kong or any other place in the world on an as-required basis.

The number of local Airworthiness Officers remained at 11. Recruitment of local officers was conducted in the year to cater for the rapid expansion of Hong Kong's aviation industry. New recruits will receive proper training before they are

discharged for inspection duties. Existing officers continued to receive training on aircraft accident investigation, aircraft type, private pilot licence and human factors, etc.

### Aircraft Maintenance Company Approvals

Hong Kong Aircraft Engineering Company Limited (HAECO), Pan Asia Pacific Aviation Services Limited (PAPAS) and China Aircraft Services Limited (CASL) were checked regularly through hangar surveys, company audits and ramp inspections, etc. CASL started to provide line maintenance support to HDA's Airbus 320/321 aircraft at line stations from August 2000.

Taikoo (Xiamen) Aircraft Engineering Company Limited (TAECO) was inspected regularly during the year. The company increased its Airbus A330 and A340 aircraft maintenance capability last year. Airworthiness Officers carried out a series of compliance audits before granting the approval in September 2000. The first A330 maintenance was conducted in October 2000.

Two new company approvals for conducting aircraft and aircraft component maintenance were issued. They were Gulf Air Maintenance Company (GAMCO) in Abu Dhabi and Metrojet in Hong Kong.

### Airlines' Engineering Section

Both CPA and HDA expanded their engineering sections in the year. HDA obtained approval to provide line maintenance at some stations such as Shanghai, Beijing and Kaohsiung. CPA also increased its engineering resources to cater for the fleet size expansion and the operation of two new line stations in Delhi and Karachi.



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適航事務組統計數字：

	數量
簽發適航證	7
更新適航證	107
審定重大改裝	10
簽發飛機維修公司許可證	2
更新飛機維修公司許可證	27



民航處職員定期視察飛機發動機維修機構。  
Aero engine maintenance organisations are visited by CAD officer from time to time.

### III. 航空人員執照事務處

#### 飛行員執照

年內，航空人員執照事務處處理了1 247份首次簽發、更新、批核和延續執照申請，並且簽發了3 035張驗身合格證明書，以及評核了3 275份飛行員及飛機維修工程師執照考試試卷。香港大部分專業飛行員執照都是以外地執照換領形式簽發。執照事務處在年內共處理了265個外地執照持有人換領香港執照的申請。

#### 飛機維修工程師執照

申請飛機維修工程師執照的數目維持在高水平，年內總數有321個，其中151個考生考試合格，獲發給所申請類別之飛機維修工程師執照。適航事務組已經印製香港適航要求HKAR-147和HKAR-66。前者主要是列明對批准維修人員考試的要求，而後者則是列明對維修人員發牌之要求。此兩份要求是根據歐洲聯合航空局現行的同類要求所演變過來。當這兩份要求分別於二零零一年及二零零二年在本港實行後，本地飛機維修工程師的發牌標準將會與歐洲大部分國家相若。現時共有三間維修培訓機構正在申請HKAR-147許可審定。這些機構分別是香港飛機工程有限公司、廈門太古飛機工程有限公司，和國泰航空公司。



### Airworthiness Office statistics:

	Number
Certificate of Airworthiness Issued	7
Certificate of Airworthiness Renewed	107
Major Modification Approved (AANs)	10
Aircraft Maintenance Company Approval Issued	2
Aircraft Maintenance Company Approval Renewed	27



## III. PERSONNEL LICENSING OFFICE

### Flight Crew Licensing

During the year, the Personnel Licensing Office handled 1 247 applications for initial issue, renewal, endorsement and extension of licences, issued 3 035 medical certificates and set 3 275 examination papers for applicants of flight crew licences and aircraft maintenance engineer licences. Most of Hong Kong's

professional flight crew licences were issued by conversion from foreign licences. This year, 265 applications from foreign licence holders were processed.

### Aircraft Maintenance Engineers Licensing

The number of aircraft maintenance engineer licence applications remained high this year at 321. Among them, 151 candidates successfully passed their examinations and were granted with relevant categories of aircraft maintenance engineer licences. The Airworthiness Office has published the Hong Kong Aviation Requirements (HKAR-147) for the approval of maintenance personnel examinations, and HKAR-66 for the licensing of maintenance personnel. These requirements were evolved from those already implemented among Joint Aviation Authorities (JAA) countries throughout Europe. As a result, standards of licensing aircraft maintenance engineers in Hong Kong will be very similar to those of JAA countries once HKAR-147 and HKAR-66 are implemented in 2001 and 2002 respectively. At present, there are three training organisations applying for the HKAR-147 approval. They are HAEKO, TAEKO and CPA.

## IV. COORDINATION WITH LOCAL AIRSPACE USERS

Meetings were held at regular intervals to coordinate operations of local airspace users within Hong Kong airspace. These local airspace users include rotary wing operators (GFS, the Hong Kong Garrison of the People's Liberation Army (PLA), HEL and HHKL), fixed wing operator (GFS, the Hong Kong Aviation Club (HKAC)), paraglider operator (the Hong Kong Paragliding Association (HKPGA)) and individual aircraft owners. Matters affecting safety of local



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### IV. 協調本地空域使用者

本部定期舉行會議，協調本地空域使用者的活動。這些本地空域使用者包括旋翼機機構（政府飛行服務隊、中國人民解放軍駐香港部隊（駐港部隊）、直升機服務（香港）有限公司、港聯直升機有限公司），定翼機機構（政府飛行服務隊、香港飛行總會），滑翔傘機構（香港滑翔傘會）及個別航空器擁有人。所有影響本地空域使用者安全的事項均會在會議上討論。除了跟進個別機構有關的事項外，會議上所討論以及持續檢討的事項有：

- 應答機在非管制空域報告區內的操作
- 本地空域的重組
- 本地飛行活動條例及規定的改良

由於石崗是本地唯一可提供作輕型航空器運作的機場，因此駐港部隊暫時批准香港飛行總會在周末繼續於石崗機場進行定翼機飛行活動和訓練。駐港部隊亦允許政府飛行服務隊在石崗訓練直升機飛行員。石崗機場各使用者會繼續與駐港部隊保持緊密聯繫，以協調所有在該機場的運作，確保飛行安全。



政府飛行服務隊飛機的運作情況受民航處監察。  
Operations of the GFS aircraft are monitored by CAD.

### V. 飛機登記

年內共有11架民用飛機在香港登記，分別為兩架A320型、一架A321型、三架A330型、一架A340型、一架B747型、一架B777型、一架小型飛機和一架R44型直升機。同期取消登記的有一架小型飛機。截至二零零一年三月三十一日，在香港登記的民用飛機共有121架。

截至二零零一年三月三十一日，香港登記的飛機類型如下：

型別	數量
空中巴士A320	7
空中巴士A321	3
空中巴士A330	20
空中巴士A340	15
波音B747	30
波音B777	12
HS125	1
BAe4100	2
各類直升機	20
其他定翼飛機	11
合計	121

### VI. 意外調查

民航處處長亦是意外調查總督察。當有飛機在香港發生意外，或在本港登記的飛機發生意外，處方會從飛行標準及適航部、機場安全標準部和航空交通管理部抽調調查主任成立小組，調查有關事件。

意外調查小組現正繼續對一九九九年八月二十二日，一架中華航空公司波音麥道-11型客機（班號CAL642）在降落香港國際機場25L號跑道時發生意外的成因及過程展開調查。這項調查可望於二零零一年年底完成。



airspace users were discussed in the meetings. In addition to addressing individual operators' concerns, the following issues were also discussed and will be subject to continuous review:

- Usage of transponder in Uncontrolled Airspace Reporting Areas (UCARAs)
- Reorganisation of local airspace
- Improvement of regulations and requirements for local flying activities

Since Shek Kong was the only airfield available for light aircraft operations, the PLA gave temporary permission to HKAC to continue its recreational fixed-wing flying and training at Shek Kong during weekends. GFS was also allowed by the PLA to conduct training for its helicopter pilots at Shek Kong. To ensure flight safety, all these Shek Kong airfield users maintained close liaison and coordination with the PLA for their operations at the airfield.

## V. AIRCRAFT REGISTER

During this year, a total of 11 aircraft were put on the Hong Kong Civil Aircraft Register. These included two A320s, one A321, three A330s, one A340, one B747, one B777, one light aircraft and one R44 helicopter. In the meantime, one light aircraft was removed from



the register. As at March 31, 2001, the total number of civil aircraft in Hong Kong was 121.

The composition of aircraft on the Hong Kong Civil Aircraft Register as at March 31, 2001 was as follows: -

Aircraft Type	Number
Airbus 320	7
Airbus 321	3
Airbus 330	20
Airbus 340	15
Boeing 747	30
Boeing 777	12
HS125	1
BAe4100	2
Helicopters	20
Other fixed-wing aircraft	11
Total	121

## VI. ACCIDENT INVESTIGATION

The Director-General of Civil Aviation is also the Chief Inspector of Accidents. When an accident occurs in Hong Kong or to a Hong Kong registered aircraft, Inspectors of Accidents are drawn from the Flight Standards and Airworthiness Division, the Airport Standards Division and the Air Traffic Management Division to form a team to conduct an investigation into such an occurrence.

The Investigation Team continued the investigation into the causes and circumstances of the aircraft accident involving a China Airlines Boeing MD-11 aeroplane (callsign CAL642), which crashed on landing on Runway 25L of HKIA on August 22, 1999. The investigation is expected to be completed at the end of 2001.



## 第四章 CHAPTER 4

### VII. 安全數據分析

本部與航空公司及維修機構保持緊密聯絡，研究涉及在香港登記飛機的事件，年內共調查和分析了579宗事件。

### VIII. 飛行訓練學校許可審定

本處於二零零零年初出版了CAD 509「飛行訓練學校許可審定」，詳述本處對香港商用(飛機)飛行員綜合訓練課程之要求。

二零零零年中，一間位於澳洲阿德萊德之飛行訓練學校－英國宇航航空訓練學校根據CAD 509文件的規定，向本處申請成為國泰航空公司及港龍航空公司的受訓飛行員訓練學校。本部審查過這所訓練學校提供之文件後，於二零零零年六月派出一



獲得本處許可審定的澳洲飛行訓練學校。  
The flying training school in Australia which has obtained CAD approval.

隊民航事務審查小組，包括一位航空營運督察，以及三位來自航空人員執照事務處、適航事務組和飛行標準組之高級航空安全事務主任，到位於阿德萊德Parafield機場的飛行訓練學校進行詳細審查。在二零零零年六月底，該學校獲得本處認可開辦飛行訓練課程，為期兩年，首批學員將於二零零一年年中畢業。飛行標準及適航部將繼續根據CAD 509文件的規定，繼續審查該校以確保所需達到標準得已維持。

### IX. 國際民航組織安全審查

國際民航組織開始了一項全球強制性航空安全監督計劃，對締約國民航規管當局進行強制性航空安全審查，旨在確保各締約國切實執行附件一(人員執照的頒發)、附件六(航空器的運行)及附件八(航空器適航性)的標準。

在二零零零年十一月十七至二十四日期間，國際民航組織審查小組到訪中華人民共和國香港特別行政區民航處，進行一系列安全審查。小組成員到過飛行標準及適航部，對航空人員執照事務處、飛行標準組及適航事務組進行了十分詳盡的審查。他們又參觀了國泰航空及港龍航空這兩間持有香港航空營運許可證的公司。

整體而言，審查小組對香港民航處評價甚高。小組成員對本處的安全審查職能及程序均感滿意。



## VII. SAFETY DATA ANALYSIS

The Division maintained close liaison with airline operators and maintenance organisations regarding occurrences involving Hong Kong registered aircraft. During the year, 579 occurrences were investigated and analysed.

## VIII. APPROVAL OF FLYING TRAINING SCHOOL

In early 2000, the Department published a document – CAD 509. This document outlines the requirements for the CAD Approval of a Flying Training Organisation offering an Integrated Course of Training for Hong Kong Commercial Pilot's Licence with Instrument Rating (Aeroplane).

In mid-2000, the BAE Systems Flight Training (Australia) Pty. Ltd., a flying training organisation in Adelaide, Australia, applied to the Department for an approval in accordance with CAD 509 to conduct flying training for the cadet pilots of CPA and HDA. After studying in detail the documents submitted by the college, a team of CAD Inspectors, including a Flight Operations Inspector and three Senior Safety Officers from the Personnel Licensing Office, the Airworthiness Office and the Flight Standards Office, conducted an in-depth audit on the college in June 2000 at the Parafield Airport in Adelaide. Approval was issued to the college to conduct flying training at the end of June 2000 for a period of two years. The first graduation will take place in mid-2001. The Flight Standards and Airworthiness Division will continue to monitor the college to ensure that the required standards stipulated in CAD 509 are maintained.

## IX. SAFETY OVERSIGHT AUDIT BY INTERNATIONAL CIVIL AVIATION ORGANIZATION

ICAO has started a Universal Safety Oversight Audit Programme comprising mandatory safety audits of the regulatory authorities of the ICAO Contracting States. The purposes of the audit are to ensure the effective compliance of standards of the Contracting States in respect of the implementation of the ICAO Annex 1 (Personnel Licensing), Annex 6 (Operation of Aircraft) and Annex 8 (Airworthiness of Aircraft).

From November 17 to 24, 2000, an ICAO Audit Team conducted a Safety Oversight Audit on the Civil Aviation Department of the Hong Kong Special Administrative Region of the People's Republic of China. The ICAO auditors conducted very thorough audits on the Personnel Licensing Office, the Flight Standards Office and the Airworthiness Office of the Flight Standards and Airworthiness Division. The auditors also visited two Hong Kong AOC holders, namely CPA and HDA.



The overall comments from the Audit Team were very positive. The auditors were satisfied with the standards of the Department's safety oversight functions and procedures.