

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營運的既定標準，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事務和調查航空意外及事故。為了執行上述的特定工作，飛行標準及適航部因而設有航空營運督察組、適航事務組及航空人員執照事務處。



檢視香港發動機服務公司維修的飛機發動機。
Inspecting an aircraft engine at HASEL.

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，分別是：

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

香港聯合直升機有限公司

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15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159次。年內，本港航空公司所使用的飛行模擬器共有19台，其中15台於年內通過評審和檢查而再次獲得認可使用，另外四台的使用批核也得到延長。與此同時，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，國泰航空公司及華民航空公司的機隊獲批准進行最低導航性能規格(MNPS)和修訂最低高度間隔(RVSM)操作。國泰航空公司年內租用了三架A340型客機，而港龍航空公司也成功引進兩架A321型客機作地區性航運之用。

本部透過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民航標準。年內共進行了20次此類巡查。

The Flight Standards and Airworthiness Division is responsible for monitoring compliance with the established aircraft airworthiness and operational standards by holders of Air Operator Certificates (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. The Division is divided into the Flight Operations Inspectorate, the Airworthiness Office and the Personnel Licensing Office to discharge these specific functions.

I. FLIGHT OPERATIONS INSPECTORATE

There were six holders of Hong Kong AOC at the beginning of the report period and there were no applications for new AOC. 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
- Metrojet Limited
- Helicopters Hong Kong Limited (HHKL)



監察政府飛行服務隊直升機運作。
Monitoring the helicopter operation of GFS.

During the year, the activities of the local AOC holders were monitored through a combined programme of inspections. The Flight Operations Inspectorate (FOI) and Senior Safety Officers conducted a total of 15 station inspections. The FOI also conducted a total of 159 in-flight, training and operational records inspections. Amongst the 19 flight simulators used by the local airlines, 15 were evaluated, inspected and re-approved for use in the year. The approvals for the other four flight simulators were also extended. The Division also continued to monitor the helicopter and fixed-wing aircraft operations of the Government Flying Service (GFS).

During the year, all aircraft of the CPA and AHK fleets were approved for Minimum Navigation Performance Specifications (MNPS) and Reduced Vertical Separation Minima (RVSM) operations. CPA leased three A340 for its services. HDA also successfully introduced two A321 for its regional operations.

To ensure compliance with international standards amongst foreign airlines using the Hong Kong International Airport (HKIA), the Division conducted 20 ad-hoc ramp inspections during the report period.

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

香港聯合直升機公司在年內引進了一架S76型直升機，參加來往香港及澳門的常設航班和提供個別包機服務。該公司另外又購入兩架Lama型直升機，用來執行吊重和空中作業等任務。直升機服務(香港)公司則在其總經理退休後重組管理層，與其姊妹公司邁特捷看齊。

本處於一九九八年八月編定了一套特別針對超長途飛行運作的飛行工作時間限制規條指引文件。年內，各香港航空營運許可證持有人依照該套規例制定飛行工作時間限制，均運作良好。此外，本部在年內出版了「強制性事故申報」(CAD 382)及「飛行訓練機構」(CAD 509)等涉及其他技術事宜的指引文件供業界參考。

II. 適航事務組

適航事務組繼續監管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及認可維修機構。適航事務組在簽發或更換適航證前，亦分別在西雅圖、土魯斯和香港進行了多次檢查。

本地適航主任的人數仍維持為11名。兩名新入職適航主任現正接受由英國民航局主辦的適航審查員課程。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、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

適航事務組對廈門太古飛機工程有限公司作出定期審查，該公司的第二機庫建造工程現已完成，可提供的飛機維修倉庫增加至四個。第二機庫的維修設施於一九九九年四月底啟用時由六個航空局作出聯合審查，計有中國民用航空總局、香港民航處、英國民航局、美國聯邦航空局、新加坡航空局及日本航空局等。

本年度分別有三間公司獲簽發公司許可證作飛機和飛機部件維修，另外亦有三個申請正在審查中。另一方面，泰國國際航空有限公司和Dunlop Aviation (Singapore) 因商業決定而放棄飛機和飛機部件維修公司許可證。



定期審查香港飛機工程公司，確保其維修服務維持高水平。
Regular audits ensure high maintenance standards at HAECO.

香港飛機工程有限公司重整

一九九九年十月，香港飛機工程有限公司裁減員工並實施自願離職計劃，令職員人數下降。適航事務組緊密監察該公司之維修水平，以及確保該公司有足夠技術人員處理工作和保持應有水準。適航主任亦於公司重組後數星期內不時審查該公司在停機坪及機庫之工作，確保飛機在香港繼續安全運作，結果相當滿意。

During the year, HHKL introduced the S-76 helicopter, operated regular flights between Hong Kong and Macau, and conducted occasional local charter flights. They also introduced two Lama helicopters specifically for the purpose of carrying underslung load and conducting aerial work. Subsequent to the retirement of its General Manager, Heliservices (Hong Kong) Limited restructured its management to bring it in line with its sister fixed wing company, Metrojet Limited.

The Flight Time Limitations (FTL) Schemes of the AOC holders, based on the new FTL guidance document published by the Department in August 1998 with particular emphasis on ultra-long range operations, proved to work satisfactorily during the report period. During the year, the Division also published guidance documents on other technical subjects, namely the "CAD 382 - The Mandatory Occurrence Reporting Scheme" and "CAD 509 - Requirements for Approval of Flying Training Organisations Offering for Hong Kong Commercial Pilot's Licence with Instrument Rating (Aeroplane)" respectively.

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 in Seattle, Toulouse and Hong Kong.

The number of local Airworthiness Officers remained at 11. The two new officers recruited last year received Surveyor Training Programme organised by the United Kingdom (UK) Civil Aviation Authority. Training on other officers continued which included aircraft accident investigation, private pilot licence and human factors courses, etc.

Aircraft Maintenance Company Approvals

Taikoo (Xiamen) Aircraft Engineering Company Limited (TAECO) was inspected regularly during the year. The construction of its second hangar was completed, increasing the total number of maintenance bays available to four. A joint audit was carried out by six aviation authorities for the checking out of the second hangar maintenance facilities at the end of April 1999. These authorities were the General Administration of Civil Aviation of China (CAAC), the Hong Kong Civil Aviation Department (HK CAD), the UK Civil Aviation Authority, the United States (US) Federal Aviation Administration, the Civil Aviation Authority of Singapore and the Japan Civil Aviation Bureau.

Three new company approvals for conducting aircraft and aircraft component maintenance were issued. Three other company approval



廈門太古飛機工程公司經民航處審查後，其維修設施方可投入運作。

CAD had audited the maintenance facilities at TAECO before they came into service.

飛機租賃

國泰航空公司已成功外租大部分B747-200和-300客機予其他外國航空公司。適航主任在每架客機外租前都會審查飛機及有關文件，並在確定一切合乎規格之後簽發符合出口聲明書。

在一九九九年五至六月期間，由於國泰航空公司在同時間有大批飛行員因病缺勤，須向其他航空公司短暫租用在海外登記的民航客機應變。事發時，適航主任亦於停機坪對所租用的飛機作抽樣審查，確保該等飛機的適航水平符合本處的要求。

適航事務組統計數字：

	數量
簽發適航證	11
更新適航證	118
重大改裝審定	16
新增單位審定	3

III. 航空人員執照事務處

飛行人員執照

年內，航空人員執照事務處處理了985份首次簽發、更新、批核和延續執照申請，並且簽發了2 809張驗身合格證明書，及評核了1 126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換領形式簽發，本年度執照事務處共接到127個外地執照持有人換領香港執照的申請。



飛行員必須持有民航處簽發的有效執照。
Practicing pilot has to hold a valid flight crew licence issued by CAD.

國泰航空公司獲本處批准，繼續舉行A330，A340，B747-400及B777型飛機等級換型訓練課程及認可其學員的考試成績。本處定期巡查監察這些課程及考試。年內共有270名學員成功完成該等課程及考試，並獲執照事務處簽發有關的飛行執照。

國泰航空公司繼續派遣見習飛行員到澳洲接受專業飛行員訓練。港龍航空公司亦再開辦見習飛行員訓練計劃，並安排其見習飛行員在澳洲同一所訓練學校接受專業飛行員訓練。因應這些見

習飛行員在考試上的需要，執照事務處年內共派員訪視該訓練學校四次，並舉辦了234次飛行員執照考試。

applications were being considered. Thai Airways International and Dunlop Aviation (Singapore) gave up their company approvals for aircraft and aircraft component maintenance due to commercial reasons.

Company Restructuring by HAECO

Staff retrenchment and voluntary retirement programme of the Hong Kong Aircraft Engineering Company (HAECO) took place in October 1999 and resulted in a reduction in the total number of employees. The Airworthiness Office closely monitored the maintenance standards and workload against available resources of HAECO. Ad-hoc ramp and hangar audits were performed during the first few weeks after the retrenchment to ensure the safety level for aircraft operations in Hong Kong were maintained. The results were satisfactory.

Aircraft Leasing

CPA had leased most of its B747-200 and -300 passenger aircraft to foreign airlines. Airworthiness Officers inspected these aircraft and their corresponding documentation before Statements of Conformity for Export were issued.

CPA had also temporarily dry leased several operators' aircraft registered outside Hong Kong to maintain its operating capacity during the period when a large number of its pilots reported sick between May and June 1999. Airworthiness Officers also carried out ramp inspections on these leased aircraft to ensure that their airworthiness standards were in compliance with those required by HK CAD.



適航主任執行職務。
Airworthiness Officer at work.

Airworthiness Office statistics :

	Number
Certificate of Airworthiness Issued	11
Certificate of Airworthiness Renewed	118
Major Modification Approved (AANs)	16
Additional Companies Approved	3

III. PERSONNEL LICENSING OFFICE

Flight Crew Licensing

During the year, the Personnel Licensing Office handled 985 applications for initial issue, renewal, endorsement and extension of licences, issued 2 809 medical certificates and set 1 126 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, 127 applications from foreign licence holders were processed.

Under the approval granted by the Department, CPA continued to conduct in-house type rating conversion courses and examinations



民航處的簽發執照制度確保飛機維修工程師達至專業水平。
Professional standards of aircraft maintenance engineers are maintained through a licensing system.

飛機維修工程師執照

飛機維修工程師執照的申請數目維持在高水平，年內總數有295個，其中100個考生考試合格，並獲發給所申請之飛機維修工程師執照。適航事務組現正印製香港適航要求HKAR-147和HKAR-66。HKAR-147主要是列明對批准維修培訓／考試的要求，而HKAR-66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地實行後，本地飛機維修人員的水平將會與歐洲大部分國家相若。

IV. 協調本地空域使用者

本部舉行定期會議，協調本地空域的使用。本地空域使用者包括政府飛行服務隊、中國人民解放軍駐香港部隊、直升機服務(香港)有限公司、港聯直升機有限公司、香港飛行總會、香港滑翔傘會及個別航空器擁有人。他們的運作都經協調以確保本地空域的飛行安全。

石崗是本地唯一可提供作輕型航空器運作的機場，為此，解放軍駐港部隊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。解放軍駐港部隊亦允許政府飛行服務隊的直升機飛行員在石崗進行訓練。解放軍駐港部隊與政府飛行服務隊及香港飛行總會保持密切聯絡，協調三方在石崗機場的運作。

V. 飛機登記

年內共有10架民用飛機在香港登記，分別為三架A340型、兩架B777型、一架小型飛機、兩架SA315 Lama型直升機，以及兩架A321型客機。同期取消登記的有八架B747型、兩架A320型和一架A330型飛機、一架小型飛機及一架AS350型直升機。截至二零零零年三月三十一日，在香港登記的民用飛機共有111架。

for the issue of aircraft ratings on A330, A340, B747-400 and B777 aircraft. These examinations were monitored by the Department through regular inspections. During the 12-month period, a total of 270 candidates completed the in-house courses and examinations and were endorsed with the appropriate aircraft rating on their licences by the Personnel Licensing Office.

CPA continued to send its cadet pilots to Australia to undergo ab initio professional pilot training. HDA re-started its cadet pilot scheme and its trainee pilots also received ab initio professional pilot training in the same training facility in Australia. To cater for the examination requirements of these cadet pilots, officers from the Personnel Licensing Office visited the facility four times during the year and a total of 234 examinations on flight crew licences were held.



民航處負責批核本地航空公司用作訓練的模擬器。

CAD is responsible for approving the simulators used by local airlines for training.

Aircraft Maintenance Engineers Licensing

The number of aircraft maintenance engineer licence applications remained high this year at 295 in total. Among them, 100 candidates successfully passed their examinations and were granted with relevant categories of aircraft maintenance engineer licences. The Airworthiness Office will publish the Hong Kong Aviation Requirements (HKAR-147) for approval of maintenance training/examinations and HKAR-66 for licensing of maintenance personnel respectively. These requirements are evolved from those already implemented among Joint Aviation Authority (JAA) countries throughout Europe. As a result, standards of 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.

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 GFS, the Hong Kong Garrison of the People's Liberation Army, Heliservices (Hong Kong) Limited, HHKL, the Hong Kong Aviation Club (HKAC), the Hong Kong Paragliding Association (HKPGA) and individual aircraft owners. Their operations were coordinated to ensure that flight safety in the local airspace was maintained.

Since Shek Kong was the only airfield available for light aircraft operations, the Hong Kong Garrison permitted the HKAC to conduct its recreational fixed-wing flying and training at Shek Kong during weekends. GFS was also allowed by the Garrison to conduct training for its helicopter pilots at Shek Kong. Close coordination among the three parties for their operations at the airfield was maintained by the Garrison.

截至二零零零年三月三十一日，香港登記的飛機類型如下：

型別	數量
空中巴士A320	5
空中巴士A321	2
空中巴士A330	17
空中巴士A340	14
波音B747	29
波音B777	11
HS125	1
BAe4100	2
各類直升機	19
其他定翼飛機	11
合計	111

VI. 意外調查

飛行標準及適航部的主管亦是副意外調查總督察，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。



民航處處長林光宇(左)向財政司司長曾蔭權講述中華航空公司麥道-11型客機意外，右為香港機場管理局行政總監林中麟。(明報周刊圖片)
Mr Albert Lam, Director of Civil Aviation (left) briefed Mr Donald Tsang, the Financial Secretary on the occurrence of the China Airlines MD-11 accident. On the right was Mr Billy Lam, Chief Executive Officer of the AAHK. (Ming Pao Weekly photo)

一九九九年八月二十二日黃昏，香港正受距離香港國際機場東北50公里的強烈熱帶風暴影響。一架中華航空公司波音麥道-11型客機(班號CAL642)在降落25L號跑道時發生意外。飛機重著陸，右邊起落架首先著地，右邊發動機整流罩底部繼而撞擊跑道，然後着火，右邊機翼脫落，左邊機翼升起，飛機開始翻滾和偏向右邊，這些動作無法修正，飛機最後在跑道右邊草地距離跑道入口約1 100米處停下，機身反轉和方向相反。指揮塔台的

當值航空交通管制員立即通知機場消防局，消防隊伍迅速趕到現場，滅火和拯救工作亦隨即展開。飛機機身的火在兩分鐘內受到控制，並在五分鐘內被完全撲滅。其他緊急服務單位亦迅即到達現場，並且即時展開搶救工作。在機上的15名機組人員和300名乘客當中，共有三名乘客死亡；六名機組人員和44名乘客嚴重受傷。

意外調查總督察根據香港民航(意外事件調查)規例已即時委任意外調查小組找尋意外成因。調查小組獲悉意外後迅即展開調查，調查由香港民航處負責，並得美國國家運輸安全局及台灣飛航安全委員會代表參與，此外，英國空中意外調查部亦被邀請協助讀取飛行數據記錄儀和駕駛艙談話記錄儀的資料。飛機意外成因現仍在調查中，草擬報告可望於二零零零年稍後完成。

V. AIRCRAFT REGISTER

During this year, a total of 10 aircraft were put on the Hong Kong Civil Aircraft Register. These included three A340, two B777, one light aircraft, two SA315 Lama helicopters as well as two Airbus A321 airliners. In the meantime, eight B747, two A320, one A330, one light aircraft and one AS350 helicopter were removed from the register. As at March 31, 2000, the total number of civil aircraft in Hong Kong was 111.

The composition of aircraft on the Hong Kong Civil Aircraft Register as at March 31, 2000 was as follows:-

Aircraft Type	Number
Airbus 320	5
Airbus 321	2
Airbus 330	17
Airbus 340	14
Boeing 747	29
Boeing 777	11
HS125	1
BAe4100	2
Helicopters	19
Other fixed-wing aircraft	11
Total	111



本年度在港登記的民用飛機數目輕微下降。
The number of civil aircraft registered with CAD decreased slightly in the year.

VI. ACCIDENT INVESTIGATION

The head of the Flight Standards and Airworthiness Division is also the Deputy 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.

In the evening of August 22, 1999, when Hong Kong was affected by the weather associated with a severe tropical storm centred at approximately 50 kilometres northeast of the HKIA, a China Airlines Boeing MD-11 aeroplane (callsign CAL642) crashed on landing on Runway 25L of the HKIA. The aircraft contacted the runway first with its right main wheels and then with the underside of the right engine cowling, which caused an outbreak of fire followed by the detachment of the right wing. The left wing, which remained intact, then lifted up and the aeroplane commenced a roll and yaw to the right, which could not be corrected, and ended up in an inverted position on a grass area just to the right of the runway, some 1 100 metres from the threshold. The Airport Fire Contingent was alerted immediately by

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338宗事件。

VIII. 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185個締約國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（飛機營運）及附件八（飛機適航）的標準。香港作為中華人民共和國特別行政區，已接獲國際民航組織通知，表示該組織將在二零零零年十一月到香港民航處審查。



民航處舉行簡布會，向航空業界代表講解國際民航組織的審查。
CAD conducted a briefing for the aviation industry representatives on the ICAO audit.

the duty air traffic controller in the Tower and the fire vehicles arrived on scene expeditiously. Fire fighting and rescue operations commenced immediately and the fire on the aeroplane was brought under control within two minutes and totally suppressed within five minutes. Other emergency service units also arrived on scene very quickly and rescue operations were conducted in an expeditious manner. Of the 15 crew and 300 passengers on board, three passengers died and six crew and 44 passengers were seriously injured.

The Chief Inspector of Accidents immediately ordered an Inspector's Investigation into the cause of the accident in accordance with the Hong Kong Civil Aviation (Investigation of Accidents) Regulations. The investigation team commenced investigation immediately after having been notified of the accident. The investigation was conducted by the Department with participation of investigators from the National Transportation Safety Board of the USA and the Aviation Safety Council of Taiwan. The Air Accidents Investigation Branch of the UK was requested to assist in the retrieval of data from the Digital Flight Data Recorder and the playback of the Cockpit Voice Recorder of the aeroplane. The accident is still being investigated and the draft report is expected to be available towards the latter part of 2000.



為機場提供服務的滅火車輛在意外發生時起着重要作用。

Fire-fighting vehicles at the airport play an important role when accident happens.

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, 338 occurrences were investigated and analysed.

VIII. SAFETY OVERSIGHT AUDIT BY ICAO

The International Civil Aviation Organization (ICAO) has started a Universal Safety Oversight Audit Programme comprising mandatory safety audits to be carried out in all its 185 Contracting States. The audits are to ensure the compliance of standards of the Contracting States in respect of the implementation of the ICAO Annex 1 (Personnel Licensing), Annex 6 (Operations of Aircraft) and Annex 8 (Airworthiness of Aircraft). Hong Kong, as a Special Administrative Region of the People's Republic of China, was advised during the year that the ICAO audit of the HK CAD would be conducted in November 2000.