



航空交通管理 AIR TRAFFIC MANAGEMENT

航空交通管理部負責在國際民用航空組織（國際民航組織）指定的香港飛行情報區內，提供航空交通管理（空管）、航行資料及飛機事故警報服務。

航空交通運作

年內，本部共處理了 278 697 架次在香港國際機場升降的國際及本地航班，並為 90 191 架次飛越香港飛行情報區，以及 42 320 架次進出澳門國際機場的航班提供服務。與去年比較，在香港國際機場升降及飛越香港的航班數目分別增加了 10.6% 和 10.9%。航空交通量上升，是由於在區內經濟復蘇帶動下，客運及航空貨運量均有所增長。

跑道升降容量

香港國際機場跑道為雙跑道運作，跑道的容量自二零零五年八月一日遞增至每小時 53 班。

The Air Traffic Management Division is responsible for the provision of air traffic control (ATC) service, flight information service and alerting service within the Hong Kong Flight Information Region (FIR) as assigned by the International Civil Aviation Organization (ICAO).

AIR TRAFFIC OPERATIONS

During the year, the Division handled a total of 278 697 international and local aircraft movements at the Hong Kong International Airport (HKIA). In addition, the Division handled 90 191 flights overflying the Hong Kong FIR and 42 320 flights into and out of the Macau International Airport. Compared to the previous year, the number of aircraft movements at the HKIA and overflights increased by 10.6 per cent and 10.9 per cent respectively. The overall increase in air traffic was due to the growth in passenger traffic and air cargo growth as a result of economic recovery.

Runway capacity

The declared runway capacity was progressively increased to 53 movements per hour on dual runway operations since August 1, 2005.

本處在教育及職業博覽會2006設置攤位，介紹部門的工作並招募優秀人才加入航空交通管理行列。

A CAD booth is set at the Education and Careers Expo 2006 to introduce different aspects of our work and attract people of high calibre to join the ATC profession.



考生參加見習航空交通管制主任招聘
評估測試。

Applicants sitting for the SATCO
recruitment examination in the
Assessment Centre.



空管主任執照考試和考核

為確保高水平的空管，本部的安全及質素事務組每年會就空管主任領有的各類執照進行實習考試。就塔台管制、進場管制和區域管制這三個組別進行的實習考試合共有 254 個。

此外，本部並會向取得有關資格的人員頒發管制員助理證書、氣象觀察證書、導師證書和搜索及拯救證書。

招聘及培訓航空交通管制人員

招聘見習航空交通管制主任

空管是一門需要特別技能及專門知識的職業，而有關技能和知識是透過多年的理論及在職訓練獲取的。因此，本地求職人士資歷未能符合這方面人力資源要求。航空交通管制主任一般從本地招聘，入職級別為見習航空交通管制主任。

為應付預期的交通增長及中長期的人事升遷需求，招聘和培訓空管人員必須周詳規劃。因此，即使政府目前仍然暫停招聘公務員，民航處也特別獲准在二零零五年進行了一次公開招聘，並有 12 個見習航空交通管制主任獲聘。為甄別合資格人選，在完成能向測驗及面試後，選拔程序還加入了兩個篩選步驟，分別為網上性格測試及評估測試，後者包括團體運動、認知能力及性格評估。

Annual Examinations and Revalidations on ATCO Ratings

To ensure a high degree of ATC standard, the Safety and Quality section of the Division carries out annual practical examinations on ratings held by Air Traffic Control Officers (ATCO). A total of 254 practical examinations were carried out in the three streams of Aerodrome Control, Approach Control and Area Control.

In addition, the Division also issues Assistant Controller Certificates, Meteorological Observer Certificates, Instructor Certificate, Search and Rescue Certificates to officers after attaining their respective qualifications.

RECRUITMENT AND TRAINING OF AIR TRAFFIC CONTROL STAFF

Recruitment of Student Air Traffic Control Officer

ATC is a very specialised profession requiring technical skills and expertise that can only be acquired through theoretical and practical on-the-job training that takes years to complete. As such, qualified human resources are not readily available among local job seekers. ATCOs are normally recruited locally as Student Air Traffic Control Officers (SATCO).

Recruitment and training of ATC staff have to be well scheduled to meet anticipated traffic growth and medium to long term manpower succession requirements. To this end, although the Civil Service recruitment freeze was still in force, a special approval was obtained for an open recruitment in 2005 and subsequently 12 SATCOs were recruited. To select the qualified candidates, two screening methods, namely on-line personality questionnaire and Assessment Centre comprising group exercise, cognitive tests and personality assessment, were included in the selection process after aptitude test and interview.



◀ 空管人員定期接受各項培訓課程，強化專業知識。

Various intensive training courses are provided for ATC staff to regularly enhance their professional knowledge.

為了讓公眾和求職人士對空管行業有更多認識，民航處派員參與「2006 教育及職業博覽」，在大學舉辦就業講座，並在年內定期安排學生參觀部門的空管設施。

截至二零零六年三月三十一日，航空交通管制主任及航空交通事務員的實際員額分別為 218 人及 91 人。

空管培訓

年內，本部主辦了不少指導班及在職訓練活動。除了已計劃的內部空管培訓和有關緊急事故的複訓課程外，本部並與民航訓練中心合辦四項課程。

培訓一直是本部其中一項重要任務。每位見習空管主任須接受約五年訓練才能晉身為完全合格的管制員，擔任二級空管主任的職位。除此以外，定期的複訓對空管主任甚為重要，因為他們必須有能力應付不常見的操作環境，例如航機遇到惡劣天氣和緊急事故等情況，才能夠成為稱職的空管主任。年內，本處舉辦了 20 項不同專業範疇的空管培訓課程及兩項複訓課程，共有 405 位人員接受訓練，其中 28 位取得空管執照和獲頒發其他在職資格。此外，14 位見習空管主任獲提供延續空管培訓，培訓內容包括私人機師執照的飛行訓練及海外航空交通管制課程。海外培訓活動可增進參與人員的航空知識，並擴闊他們所接觸的航空交通管制運作層面。

With the objective of introducing the profession to the public and potential job applicants, CAD participated in the Education and Career Expos 2006, held career talks in universities and arranged regular visits to our ATC facilities for students throughout the year.

As of March 31, 2006, the strength of ATCOs and Air Traffic Flight Services Officer was 218 and 91 respectively.

ATC Training

Courses of instruction and on-the-job training activities continued to be intensive all year round. Apart from the programmed in-house ATC training and refresher courses on aircraft emergency situations, the Division also conducted four courses in conjunction with the Civil Aviation Training Centre.

Training continues to be one of the major tasks of the Division. On the one hand, it takes about five years to train up a person from SATCO to the status of a fully qualified controller at the rank of ATCO II. On the other hand, periodic refresher training is important to fully qualified ATCOs to ensure their competency in responding to unusual circumstances, such as poor weather operations and aircraft emergencies. During the year, a total of 20 ATC training courses on various disciplines of the profession and two refresher training courses were conducted for 405 officers leading to the issue of 28 ATC ratings and the attainment of other professional qualifications. In addition, as part of the continuous ATC training, 14 SATCOs were provided with Private Pilot Licence flying training and overseas courses on air traffic control. These overseas training activities enhanced their aviation knowledge and broadened their exposure in ATC operations.



民航訓練中心提供的培訓

本部與民航訓練中心合辦四項課程，包括三項「航空交通管理概論」課程及一項「航空交通管制單位對飛機緊急事故之應變」課程。這些課程的報讀情況相當理想，學員為來自航空相關界別的人士，以及對課程感興趣的市民。

Training offered by Civil Aviation Training Centre

The Division also conducted four courses in conjunction with the Civil Aviation Training Centre – three “Introduction to Air Traffic Management” courses and one “Response to Aircraft Emergencies by Air Traffic Control Units”. These courses were well attended by personnel engaged in the aviation-related industries and the interested public.

新航空交通管理程序

NEW AIR TRAFFIC CONTROL PROCEDURES

區域導航標準儀表離場程序

Area Navigation (RNAV) Standard Instrument Departure (SID) Procedures

二零零五年七月，民航處在香港終端區空域成功實行區域導航標準儀表離場程序。這套新程序按照國際民用航空組織所訂準則制定，利用在新式飛機上先進的全球衛星導航系統進行區域導航。相對於利用傳統地面導航信標導航，裝設全球衛星系統接收器的飛機，可以更準確地航行於指定航線上。

CAD successfully implemented a set of RNAV SID procedures in the Hong Kong Terminal Airspace in July 2005. The new procedures were designed in accordance with the criteria stipulated by the ICAO. These procedures make use of the latest Global Navigation Satellite System (GNSS) technology on-board modern aircraft in providing area navigation (RNAV) guidance. Aircraft equipped with GNSS receivers can fly the designated flight path with much higher accuracy than using conventional ground-based navigation beacons.

採用區域導航的飛機飛行航跡較為精準，因此大大減低飛機不慎飛近附近障礙物的風險。此外，精確的航跡一定程度上減少了受噪音影響的範圍。統計數字顯示，二零零五年七月在馬灣一帶錄得的區域導航飛行平均噪音水平，較非區域導航飛行的水平低 0.4 分貝。

Since the flight paths of the RNAV flights are more consistent, the risk of such aircraft inadvertently flying too close to surrounding terrain is much reduced. In addition, these flights produce more confined noise footprints. According to statistics, the average noise level of RNAV flights recorded over Ma Wan areas in July 2005 is 0.4 dB less than the non-RNAV flights.



流量管理程序

為使抵港飛機降落香港國際機場的流程更有秩序和效率，民航處在二零零五年七月實施一套航空交通流量管理程序，由一個經驗豐富的雷達管制員計算出每架飛機的預計降落時間、抵達次序及所需的延誤。在新程序下，機師可以預先獲告知預計的延誤，而管制員又可以更有效地編排交通，以節省燃料和避免進場及區域管制扇區超出工作量負荷。

安全及質素保證管理

本部致力確保空管安全並提升航空交通服務的表現質素。為達到這個目的，本部與飛行標準及適航部航空交通管理標準組緊密合作，確保航空交通服務盡量維持在最高安全水平。本部負責一切有關質素保證以及安全管理系統的發展和維修的工作。在航空交通服務系統和程序有任何主要變動前，進行安全評估，藉此積極推行風險管理，並根據國際民航組織規定及民航處的監管規定，推行安全管理政策。此外，本部亦會定期進行內部審計，監察和評估航空交通服務系統的安全程度。為提高員工對安全管理的認識，本部會持續提供安全管理系統訓練。

Flow Management Procedures

To achieve a more orderly and efficient flow of arriving aircraft to the Hong Kong International Airport, CAD implemented a set of air traffic Flow Management Procedures in July 2005. An experienced radar controller calculates expected landing time, the arrival sequence and required manoeuvres for individual aircraft. The new procedures enable pilots to be notified in advance of expected delays and controllers to sequence traffic more effectively for fuel saving and avoiding capacity overload of the Approach and Enroute sectors.

SAFETY AND QUALITY

The Division endeavors to ensure ATC safety and enhance quality in the performance of air traffic services. To this end, the Division works closely with the Air Traffic Management Standards Office (ATMSO) in the Flight Standards and Airworthiness Division to ensure that the safety of air traffic services is maintained at the highest level as far as practicable. Activities related to quality assurance and the development and maintenance of the Safety Management System (SMS) are being carried out in the Division. Proactive risk management and implementation of safety management policies in compliance with ICAO provisions and CAD regulatory requirements are accomplished by conducting safety assessments before introducing any new or significant changes to ATS systems and procedures. In addition, regular internal audits are conducted to monitor and assess ATS systems safety levels. On-going SMS training is provided to staff to enhance their understanding of safety management.

駐港部隊、政府飛行服務隊及多個政府部門參與二零零五年度搜索及拯救演習。

PLA, GFS and various Government departments participate in the SAREX 2005.



二零零五年度搜索及拯救演習

二零零五年度搜索及拯救演習在二零零五年八月十七至二十二日順利舉行。這個演習每年舉辦一次，旨在測試在香港飛行情報區內進行搜救時所採取的預警、協調和通訊程序的效率。演習包括：中程搜索演習、其後進行的短程拯救演習、簡報會及匯報會和檢討會議。

參與是次演習的單位包括中國人民解放軍駐香港部隊（駐港部隊）、政府飛行服務隊、香港警務處（水警總區）、海事處和消防處。演習期間，醫療輔助隊、民眾安全服務隊和香港天文台提供一切所需協助，民航處則負責監控和統籌整個搜救行動。

除了本地搜救機關外，還有來自七個東南亞區民航機構和搜救組織的代表到場觀摩。本地和海外記者也獲邀出席，是次演習並獲廣泛報道。

二零零五年八月十八日進行的中程搜索演習在香港以南約 30 海里進行，八月二十二日進行的短程拯救演習則在南丫島離岸地區舉行。在每項演習中，駐港部隊均派出船隻和直升機，聯同政府飛行服務隊飛機和直升機執行搜救任務，並由民航處航空搜救協調中心策劃和統籌。

SEARCH AND RESCUE EXERCISE (SAREX) 2005

SAREX 2005 was successfully conducted from August 17 to 22, 2005. The main objective of this annual exercise was to test the effectiveness and efficiency of the alerting, co-ordination and communication procedures for the provision of search and rescue services in the Hong Kong FIR. It consisted of a medium range search exercise followed by a short range rescue exercise, together with briefing, debriefing and review meetings.

Participants of SAREX 2005 included the People's Liberation Army Forces Hong Kong (PLA), Government Flying Service (GFS), Hong Kong Police Force Marine Region, Marine Department and Fire Services Department. They were supported throughout the exercise by Auxiliary Medical Service, Civil Aid Service and Hong Kong Observatory. During the exercise, CAD provided an overall control and co-ordination for the search and rescue operations.

In addition to local SAR agencies, representatives from seven aviation authorities and rescue organisations from the South East Asia Region were present and participated as observers. Local and international reporters also were invited to the event and they gave wide media coverage of the exercise.

The medium range search exercise held on August 18, 2005 centred on an area approximately 30 NM south of Hong Kong whilst the short range rescue exercise on August 22, 2005 was conducted off-shore of Lama Island. For each exercise, the PLA vessels and helicopters worked alongside GFS aircraft and helicopters to conduct search and rescue missions that were planned and co-ordinated by the CAD Aeronautical Rescue Co-ordination Centre.



舉行檢討會議的目的是從策劃、協調、通訊和信息分發等各方面評估搜救演習的結果。二零零五年度搜救演習獲各方給予高度評價，取得豐碩的成果。

Review meetings were held to evaluate the planning, co-ordination, communication and dissemination of information throughout each exercise. The favourable comments from all parties indicated that the objectives of SAREX 2005 had been satisfactorily achieved.

珠江三角洲地區航空交通管理計劃

AIR TRAFFIC MANAGEMENT PLAN FOR PRD REGION

民航處、中國民航總局與澳門民航局一直保持溝通，檢討和優化珠三角空域的空管運作。年內，三方工作小組繼續研究長遠解決珠三角空中交通管理，以及重整珠三角空域的可行方案。本部聯同其他分部的專家繼續與中國內地和澳門的民航機構緊密合作，製訂綜合航空交通管理計劃，以提高珠三角地區內航空交通的處理能力和飛行安全，並致力維持區內航空交通至二零二零年的持續發展。與此同時，本部亦利用了新購置的電腦「快速模擬器」，驗證及評估各項建議空域模式。工作小組計劃在二零零六年內完成制定初步計劃。

ATC operation over the Pearl River Delta (PRD) region have been continuously reviewed and refined through tripartite co-ordination amongst CAD, Civil Aviation Administration of China and Civil Aviation Authority Macao. The tripartite working group formed to explore long-term resolutions of air traffic management over PRD and rationalise the PRD airspace continues to function in the year. The Division, together with specialists from other Divisions, continues to work closely with the civil aviation authorities of the Mainland and Macao on an integrated air traffic management plan that would enhance air traffic capacity, flight safety and ensure sustainable traffic growth within the PRD region up to 2020. The newly acquired computer evaluation tool, the Fast Time Simulator, has been put to good use in validating the different proposed airspace models. The working group aimed to complete the initial plan within 2006.

服務了六十年的航空流動通訊中心在二零零五年八月三十一日終止運作，完成歷史任務。

The Aeronautical Mobile Centre concludes its historic mission on August 31, 2005 after 60 years of service.



海外空管會議和研討會

年內，本部繼續積極參與各個與航空交通管理事務有關的海外會議和研討會，包括由國際民用航空組織和其他航空機構主辦的會議和研討會。二零零五年七月二十至二十九日，亞太洋區航空導航策劃及執行地區小組轄下航空交通管理/航空資料服務/搜索及拯救分組第15次會議在曼谷舉行。會上，民航處署理助理處長（航空交通管理）伍崇正接任會議主席。

電訊服務

二零零五年十月一日，民航處進行改組，將原本隸屬工程及系統部的電訊組併入航空交通管理部。合併目的是希望通過協同合作，提升運作效率和改善資源管理。電訊組的職責維持不變，繼續專責提供固定航空通訊、航空氣象廣播和搜救任務通訊等服務，並就通訊運作事宜提供專業意見。

隨著西沙甚高頻通訊設施投入運作，航空流動通訊中心在二零零五年八月三十一日完成其歷史使命，並終止運作。過去60年來，該中心一直在香港飛行情報區內提供專業長程地空高頻通訊服務。

OVERSEAS ATC MEETINGS AND CONFERENCES

During the year, the Division continues to participate actively in overseas meetings and conferences on issues related to air traffic management. These include meetings, seminars and conferences initiated by the ICAO and other aviation authorities. During the 15th meeting of Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) ATM/AIS/SAR Sub-group held in Bangkok from July 20 to 29, 2005, the Acting Assistant Director-General of Civil Aviation (Air Traffic Management), Mr Colman Ng, was given the honour to take up the Chairmanship of the Meeting.

TELECOMMUNICATIONS SERVICES

With the re-structuring of CAD on October 1, 2005, the Telecommunications Unit, originally under the Engineering and Systems Division, was integrated into the Division. The integration aims to enhance operational efficiency and resource management through synergy. The responsibilities of the Unit remain the same, i.e. responsible for the provision of aeronautical fixed and broadcast services as well as communications for search and rescue mission. The Unit continues to provide expert advice on operational communications matters.

With the Xisha Very High Frequency (VHF) communication facilities commissioned for operational use, the Aeronautical Mobile Centre gloriously completed its mission on August 31, 2005 after providing over 60 years of professional long range air-ground communication services over High Frequency (HF) in the Hong Kong FIR.



為了引進最新的航空網絡科技，電訊組在年內聯同民航訓練中心，舉辦了兩個為期五天的航空電訊網和航空交通服務信息處理系統課程。來自韓國、泰國和澳門的空管和電訊當局代表也有參與課程，並加以讚許。

To introduce new aeronautical network technology to the aviation industry, the Unit conducted two five-day courses on Aeronautical Telecommunications Network (ATN) and ATS Message Handling System (AMHS) during the year in conjunction with the Civil Aviation Training Centre. Representatives of ATC and telecommunication authorities from the Republic of Korea, Thailand and Macao also attended the courses and gave favourable comments.

關於固定航空通訊服務，電訊組年內處理的電報總量達 23 464 482 個，較上年度增加 1.72%。

Regarding the Aeronautical Fixed Service, the number of messages handled by the Unit during the year reached a total of 23 464 482, representing 1.72 per cent increase over the last year.

航空氣象廣播服務方面，電訊組年內為航機提供合共 214 325 次氣象報告，數目與去年大致相若。

In respect of the Aeronautical Broadcast Service, a total of 214 325 weather messages were provided to aircraft in flight during the year. The number was roughly the same as in the previous year.