

致力於安全及有效率的航空系統  
Committed to a Safe and Efficient Air Transport System

第二章 CHAPTER 2

# 航空交通管理 Air Traffic Management



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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制、航行資料及飛機事故警報等服務。

南中國海地區之航路結構於二零零一年十一月作出修改，部分原有航路由新航路所取代，藉此提高區內航空交通管理的效率和容量。與此同時，新的三亞負責區成立，接管部分香港飛行情報區及負責區所提供的航空交通服務。三亞負責區備有雷達控制及甚高頻通訊服務，使南中國海整體航空交通管理服務的質素、飛行安全及效率大為提高。

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).

In November 2001, the air route structure over the South China Sea area was revised. New routes were introduced to replace some of the previous routes for increased air traffic management efficiency and capacity. Simultaneously, a new Sanya Area of Responsibility (AOR) was established to take over the provision of air traffic services within portion of the Hong Kong FIR and AOR. As a result, the overall quality of service as well as safety and efficiency in the South China Sea area was enhanced with the provision of radar control and Very High Frequency communication services in the Sanya AOR.

## I. 航空交通量

年內，本部共處理了208 707架次在香港國際機場升降的國際及本地航班，並為92 181架次飛越香港飛行情報區及負責區的航班提供服務。與去年比較，在香港國際機場升降的航班及飛越香港的航班數目分別增加約5.2%和7.8%。儘管全球經濟下調令整體航空交通量減少，以及南中國海航路重組導致香港提供航空交通服務的面積縮減，香港仍錄得以上增長。

## II. 招聘及培訓航空交通管制人員

航空交通管制是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理論和在職訓練獲取的。由於本地勞工市場並不能提供這方面的人力資源，所以空管人員都是由民航處依照既訂的計劃在內部培訓。

為確保有足夠人手應付日常運作、預期的交通增長及長遠的職級接班需求，招聘及培訓已成為部門其中一項主要任務。在二零零一／零二年，本處招聘了14名見習航空交通管制主任及八名航空交通事務員。截至二零零二年三月

## I. AIR TRAFFIC

During the year, the Division handled a total of 208 707 international and local aircraft movements at the Hong Kong International Airport (HKIA) and 92 181 flights overflying the Hong Kong FIR and AOR. Compared to the previous year, the number of aircraft movements at HKIA and overflights increased by 5.2 per cent and 7.8 per cent respectively, despite the overall reduction in air traffic due to the world-wide economic downturn, and the major reorganisation of air routes over the South China Sea area. The reorganisation resulted in a reduction of the area in which Hong Kong provides air traffic services.

## II. RECRUITMENT AND TRAINING OF AIR TRAFFIC CONTROL STAFF

ATC is a very specialised profession requiring technical skills and expertise that are acquired through theoretical and practical on-the-job training. As such, human resources are not readily available in the local labour market. Training of ATC staff is conducted in-house in accordance with an established departmental training programme.

With a view to ensuring that adequate staff is made available to meet the demand of daily operation, the anticipated traffic growth and the long-term manpower succession requirement, recruitment and training continued to be one of the major tasks of the Department. In 2001/02, a total of 14 Student Air Traffic Control Officers (SATCOs) and eight Air Traffic Flight Services Officers (ATFSOs) joined the service. As at March 31, 2002, the



民航處於「教育及職業博覽2002」設置展覽攤位，介紹部門提供之主要服務和入職機會。

CAD set up a booth at the Education and Career Expo 2002 to introduce the Department's core services and employment prospects.

三十一日，本處共有222位航空交通管制主任及103位航空交通事務員。

為了使公眾及求職人士多認識航空交通管制這個行業，本處在二零零二年參加勞工處及貿易發展局合辦的「教育及職業博覽2002」。此外，我們亦在兩所大專院校及在香港飛行總會舉辦之香港航空日安排了三次職業介紹講座。

航空交通管制主任需要定期在模擬器接受技術複訓，以確保他們有能力應付不常見的操作環境，例如航機遇到惡劣天氣和出現緊急事故等情況。此外，本處在實施會對運作系統構成重大轉變的新運作程序前，往往會為空管人員提供適應訓練。年內，本處舉辦了27項空管訓練課程，包括兩項複訓及四項適應訓練，為各級航空交通管制主任和航空交通事務員提供共674次訓練機會。

strength of Air Traffic Control Officer (ATCO) and ATFSO was 222 and 103 respectively.

With the objective of introducing the profession to the public and potential job applicants, CAD participated in the Education and Career Expo 2002 organised jointly by the Labour Department and the Trade Development Council. Three career talks were also delivered to students in two tertiary education institutes and during the Hong Kong Aviation Day organised by the Hong Kong Aviation Club.

ATCOs are required to receive periodic refresher training in the ATC simulators to ensure that their competency in responding to unusual circumstances, such as poor weather operations and aircraft emergencies, is well maintained. Conversion training is normally provided to ATC staff prior to implementation of new procedures that will bring major changes to the operational system. During the year, a total of 27 ATC training courses on various disciplines of the profession, including two refresher training and four conversion training courses, were conducted providing a total of 674 training opportunities for the various ranks of ATCO and ATFSO grades.



助理處長（航空交通管理）羅崇文與中國民航三亞航務管理站站長陳超簽訂空中交通管制移交協議。

Mr Norman Lo, Assistant Director-General (Air Traffic Management) signed the Letter of ATC Transfer with Mr Chen Chao, Director General Sanya, Air Traffic Management, Civil Aviation Administration of China.

### III. 航空交通管理

經中國和越南雙方同意，及在國際民航組織支持下，南中國海的飛行空域和航路在二零零一年十一月二日重劃，以提升區內航空交通管制服務的效率和質素。飛行空域重劃後，香港與曼谷之間開設了一條距離較短的新航路，把來往這兩個城市的飛行時間縮短了約十分鐘。整個地區過渡到新飛行空域結構的過程順利，修正航路系統的運作情況亦令人滿意。

為了充分利用飛行空域，香港將於二零零二年十月實施縮小垂直間隔的規定，把配備適當儀器和在29 000呎以上高度飛行的飛機之間的垂直間隔降低。實施新標準後，飛機運作將更有效率，既可節省航空運輸所需燃料，亦有

### III. AIR TRAFFIC MANAGEMENT

With an agreement between China and Vietnam and under the coordination of ICAO, the airspace and air route structure over the South China Sea was reorganised on November 2, 2001 with the objective of promoting efficiency and quality of ATC service in the region. A new air route has been established to shorten the flight distance between Hong Kong and Bangkok by about 10 minutes flying time. The transition to the new airspace structure was smooth and the operation of the revised air route system has been highly satisfactory.

As part of the initiative to further optimise airspace utilisation by reducing the vertical separation standard between suitably equipped aircraft above 29 000 feet, Hong Kong will implement Reduced Vertical Separation Minimum (RVSM) in October 2002. The new separation standard will enable more efficient aircraft operations, achieve better fuel economy for air transportation and help to minimise ground delay. During the year, CAD undertook extensive preparation work for implementation planning of RVSM

助減少延誤。本部在年內致力籌備此項計劃，於模擬系統進行了連串評估，以發展適當程序及確認所需之訓練。香港也積極參與國際民航組織所設立的縮小垂直間隔標準專責小組，協調此計劃在區內的施行情況。

為了確保珠江三角洲地區的航空交通服務既安全又有效率，本處繼續與國內及澳門的民航管理部門保持緊密聯繫。年內，有關會議共舉行了七次，檢討及改良航空管理和協調程序。

#### IV. 安全及質素管理

民航處參照英國民航局於二零零零年十二月對本港空管系統檢討後所作建議，在航空交通管理部內透過重組管理人員而設立一個安全及質素組。此組別

and carried out a series of evaluation in the simulator to develop the procedures and identify the training requirement. Hong Kong also participated actively in the ICAO RVSM Task Force, which was established to coordinate RVSM implementation on a regional basis.

As part of our continuous effort to ensure the provision of safe and efficient air traffic services in the Pearl River Delta, close liaison was maintained with the aviation authorities in the Mainland and Macao. Throughout the year, a total of seven meetings with these authorities were held to review and refine the ATC and coordination procedures.

#### IV. SAFETY AND QUALITY

Pursuant to the recommendations of an ATC review conducted in December 2000 by the United Kingdom Civil Aviation Authority, the Air Traffic Management Division has reorganised its structure and established a Safety and Quality (SQ) Section



航空交通管制員在模擬器接受培訓。  
Training of air traffic controllers at the simulator.

於二零零二年一月一日成立，主要的工作是發展一套內部安全管理系統，以及確保這套系統按照安全管理的原則，在空管運作和相關業務上施行。為了使本部能滿足區內預計增長的航空交通需求，以及應付珠江三角洲日益複雜的航空交通運作，新成立的小組正全力以赴，實施安全及質素管理計劃。

since January 1, 2002. The primary roles of the Section are to develop an in-house Safety Management System (SMS) and to oversee the implementation of the system in ATC operations and its associated activities in accordance with safety management principles. To strengthen the Division's ability to cope with an anticipated increase of air traffic within the Region and the ever-increasing complexity of air traffic operations within the Pearl River Delta, the Section has been functioning in a robust manner to facilitate the implementation of safety and quality assurance programmes.





航空交通管制中心為整個空管系統的樞紐。  
The Air Traffic Control Centre is the nerve centre of the entire ATC system.

安全及質素組的主要功能為：

- 根據清晰的安全政策及目標實施安全管理系統；
- 通過施行安全程序，實現安全政策和目標；
- 發展及管理質素保證計劃；
- 監察和衡量空管之安全及質素表現；
- 為空管前線工作人員進行定期評估；
- 與鄰近空管部門保持聯繫以確保區內航空交通安全及質素；
- 調查空管事件及提出改善安全的措施；
- 設立及保存空管事件資料庫以掌握安全趨勢；以及
- 對空管運作進行定期審查。

The basic functions of the SQ Section include:

- Implementation and administering of the SMS that is driven by clear safety policies and objectives;
- fulfilling safety policies and objectives through implementation of safety procedures;
- developing and managing quality assurance programmes;
- overseeing and measuring safety and quality performance of ATC services;
- implementation and maintenance of ATC staff proficiency scheme;
- coordinating with adjacent service providers to ensure safety and quality services within the region;
- investigation of ATC occurrences and recommending safety improvement measures;
- setting up and maintaining a database to identify safety trends;
- and
- conducting periodic safety audit of ATC activities.