

# 航空交通管理

## Air Traffic Management

航空交通管理部負責為在香港飛行情報區內航行的民航機提供空中導航服務，當中包括航空交通服務，通訊、導航及監察，以及搜索和救援。為了維持香港飛行情報區的航空交通運作暢順，本部也負責培訓空管人員，提供航空電訊服務，協調航班和設計航空交通管制(空管)程序。

The Air Traffic Management Division (ATMD) is responsible for the provision of air navigation services to civil aircraft operating within the Hong Kong Flight Information Region (HKFIR). The services include air traffic services, communications, navigation and surveillance as well as search and rescue. In order to maintain a smooth operation of air traffic operating in the HKFIR, ATMD is also responsible for the training of air traffic control personnel, provision of aeronautical telecommunication services, flight schedule coordination and the design of air traffic control procedures.









控制塔台為進出香港國際機場的航機提供空管服務。

*The Air Traffic Control Tower provides air traffic control services to aircraft operating at Hong Kong International Airport.*

## 航空交通運作

在本財政年度內，航空交通管理部處理了397 235架次在香港國際機場升降的國際及本地航班，並為234 148架次飛越香港飛行情報區的航班(當中包括53 320架次進出澳門國際機場的航班)，提供空管服務。與上一年度比較，在香港國際機場升降的航班數目增加4.9%，而飛越香港的航班數目則增加4.6%。

### 跑道升降容量

通過進一步優化飛行程序，並在部分航線引進縮小縱向間隔標準之後，香港國際機場雙跑道的最高容量，已於年內遞增至每小時67架次。香港國際機場更於二零一五年二月十四日，錄得一共1 179架次的年度單日航班升降新紀錄。

## AIR TRAFFIC OPERATIONS

During the financial year, ATMD handled 397 235 international and local aircraft movements at Hong Kong International Airport (HKIA). In addition, the Division handled 234 148 flights overflying the HKFIR (including 53 320 flights into and out of Macao International Airport). Compared with the previous year, the number of aircraft movements at HKIA and overflights increased by 4.9% and 4.6% respectively.

### Runway Capacity

Further enhancements to flight procedures and the introduction of reduced longitudinal separation standards on some routes enabled the handling capacity for the two runways at HKIA to be increased to a maximum of 67 movements per hour within the year. On 14 February 2015, a total of 1 179 flight movements were handled at HKIA setting a new single day record during the year.

### 航空交通管制主任執照考試和覆核

為維持空管運作的應有表現和安全標準，本部的訓練及安全組為航空交通管制主任(空管主任)安排各類考試。年內，就塔台管制、進場管制和區域管制三個空管組別共舉行了228次考試。此外，本部也向經考核及格的人員頒發助理管制員證書、空管氣象記錄員證書、在職培訓導師證書和流量管制證書。

## 招聘和培訓空管人員

### 招聘和培訓見習空管主任

招聘和培訓見習空管主任的工作必須審慎規劃和管理，以配合預期的航空交通增長和人手需求。由於本地就業市場欠缺具備所需資歷的空管主任，民航處通常會招聘見習空管主任，經過專門培訓後，再擢升成為空管主任。

在招聘見習空管主任期間，合資格的申請人必須通過一系列測試，包括才能測驗筆試、工作性格測驗和面試。合格者繼而會在評估中心接受更深入的認知能力測試和性格評估。

航空交通管制大樓內的航空交通管制中心。  
The Air Traffic Control Centre at the Air Traffic Control Complex.

## Examinations and Revalidations of Air Traffic Control Officer Ratings

The Training and Safety Section of ATMD carried out practical examinations on Air Traffic Control Officers (ATCOs) to ensure that the required performance and safety standards in air traffic control (ATC) operations are maintained. In the year, 228 practical examinations were conducted in the three ATC streams – Aerodrome Control, Approach Control and Area Control. In addition, ATMD also issued Assistant Controller Certificates, ATC Meteorological Reporter Certificates, On-the-job Instructor Certificates and Flow Control Certificates to officers who had attained these qualifications.

## RECRUITMENT AND TRAINING OF ATC STAFF

### Recruitment and Training of Student ATCOs

The recruitment and training of ATC staff has to be carefully planned and managed to meet anticipated air traffic growth and manpower needs. As qualified ATCOs are not readily available in the local job market, individuals are normally recruited as Student Air Traffic Control Officers (SATCOs). After specialised training, they will progress from SATCOs to ATCOs.

During the recruitment of SATCOs, eligible candidates will go through a series of written aptitude test, occupational personality questionnaire and interview. Further in-depth assessment on cognitive ability and personality traits will be conducted in the Assessment Centre for candidates who pass the previous tests.





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見習空管主任的培訓計劃規劃周詳，務使受訓學員的表現能達到既定的進展基準。培訓計劃由不同階段的訓練單元組成，以確保學員充分掌握所學技能後，才開始接受另一單元的培訓。各個訓練單元均包括課堂學習、利用空管雷達模擬器或塔台模擬機進行模擬訓練，以及於工作崗位接受在職培訓。受訓人員必須通過考核，才會獲准獨立工作。培訓見習空管主任成為合資格的管制員，以擔任二級空管主任職位，一般需時五至六年左右。

除本地培訓外，見習空管主任也會到海外修讀基本空管課程，內容廣泛，包括空管程序、氣象、雷達操作、飛行原理等航空知識，以擴闊他們在空管運作方面的閱歷。預計部分表現理想的新入職見習空管主任，將在下一個財政年度獲派修讀海外課程。

截至二零一五年三月三十一日，空管主任的編制有291人，為空管主任提供支援的航空交通事務員則有118人。

The training programme of SATCOs is carefully designed and arranged to meet the established performance development benchmarks. It comprises staged training modules to ensure adequate consolidation before the next module. Each training module includes classroom lectures, practical training in the ATC Radar Simulator or Aerodrome Simulator, and on-the-job training at operational positions. After passing the validation check, the officer will be allowed to operate independently. The training of a SATCO to become a fully qualified controller at the rank of ATCO II normally takes around five to six years.

Apart from local training, SATCOs also attend overseas basic ATC courses, a wide coverage of aviation topics including ATC procedures, meteorology, radar operations and principles of flight will be introduced to broaden their exposure to various aspects of ATC operations. Subject to performance, it is expected that some recently recruited SATCOs will attend overseas training in the next financial year.

As at 31 March 2015, the ATCO and Air Traffic Flight Services Officer (supporting staff to ATCO) establishment numbered at 291 and 118 respectively.

### 其他職級的空管培訓

提供空管專業培訓是航空交通管理部的重點任務之一。本部在年內持續舉辦多項培訓課程和在職培訓活動。

年內，本部舉辦了37項專業培訓課程，受訓人員從中取得多項專業資格，獲發49項空管執照。此外，又為226名區域及進場管制員舉辦監察管制複修課程，以備他們在面對突發情況時，例如航機遇到惡劣天氣或其他緊急事故等，也能應付裕如。本部還挑選了多名資深的空管主任接受不同範疇的進階培訓，包括安全管理系統、新式飛機操作、飛機意外調查、安全審計、飛行程序設計、教學技巧和人力資源管理等方面，開拓他們的眼界，使他們勝任更專門的職務，以及承擔管理和督導責任。

### 其他培訓

除了安排內部空管培訓課程外，本部也與香港民航訓練中心定期合辦航空交通管理概論課程，讓業界伙伴和市民更深入了解空管工作。課程舉辦經年，一直深受歡迎。

### ATC Training for Other Ranks

One of ATMD's major tasks is the provision of professional ATC training. Training courses and on-the-job training activities were conducted regularly throughout the year.

During the year, 37 professional ATC training courses were conducted, leading to the issuance of 49 ATC ratings and the attainment of various professional ATC qualifications. Surveillance control refresher training was conducted for 226 Area and Approach Control personnel. The refresher training aims to ensure controllers' competency in responding to unusual circumstances, such as poor weather operations and aircraft emergencies. In addition, senior ATCOs were selected to attend advanced training in Safety Management Systems, Operations of Modern Aircraft, Aircraft Accident Investigation, Safety Audits, Flight Procedures Design, Instructional Techniques and Human Resources Management, etc., to broaden their horizons, and enable them to undertake more specialised duties as well as taking on management and supervisory responsibilities.

### Other Training Offered

Apart from the in-house ATC training courses, ATMD also conducted an Air Traffic Management Introductory Course in conjunction with the Hong Kong Civil Aviation Training Centre for industry partners and the public to have a better appreciation of air traffic management functions. The course is conducted regularly and has been well received.





## 新空管 / 飛行程序

年內，本部改進了三條主要抵港航線的其中之一，提升航機的操作效率，改善航機下降程序，使空管人員能夠更有效率地把來自不同方向的航班匯合排序，並在香港國際機場抵港航班頻繁的情況下，確保雙跑道能夠持續地高效運作。

此外，民航處又修訂了於消減噪音時段採用的持續降落模式進場程序，以切合各新機種飛機的高效能飛行特性。

飛越香港飛行情報區前往澳門國際機場的航班不斷增加，民航處因而新增多個外圍空中等候區域，以減輕香港西南方繁忙空域的擠塞問題，同時又可提高對前往深圳國際機場航班的處理能力。

## NEW ATC / FLIGHT PROCEDURES

During the year, ATMD has enhanced one of the 3 major arrival routes to Hong Kong International Airport (HKIA) in terms of improved aircraft operating efficiency, a more manageable flight profile for air traffic controllers to integrate with arrivals coming from other directions, and improved the sustainability of a high arrival rate at HKIA under the dual runway system.

In addition, Continuous Descent Approach procedures, which are utilised during noise mitigation periods, were revised to suit the efficient flight characteristics of newer aircraft types.

With the increasing volume of air traffic operating to Macao International Airport through the Hong Kong Flight Information Region, additional outer holding areas were established to reduce congestion in the busy airspace to the south west of Hong Kong. Such measure could also enhance the handling capacity for flights operating to Shenzhen International Airport.



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## 珠江三角洲(珠三角) 地區航空交通管理計劃

為了全面落實珠三角空域優化計劃內的優化措施，民航處繼續與相關單位緊密聯繫。年內，民航處先後與國家民航局中南地區管理局、中南地區空中交通管理局、解放軍廣州軍區空軍司令部(廣州空軍)及深圳市交通委員會等單位會面，討論珠三角空域管理的相關議題，以及就香港、深圳兩地機場的未來發展交換意見。二零一五年一月，民航處處長更陪同運輸及房屋局局長前往北京拜會國家民航局，討論珠三角空域議題和簡介香港機場三跑道系統計劃工作的進展。國家民航局表示十分關注香港航空業的發展，更支持香港發展三跑道系統，並鼓勵內地空管部門與香港保持溝通和合作。

民航處會繼續透過三方工作組平台推動珠三角空域優化計劃內的各項措施，例如在香港與廣州飛行情報區之間再增加空管移交點，以及優化珠三角地區機場離場航班放行機制。

## 電訊服務

本部航空通訊組年內處理的資訊量顯著增長，其中通過固定航空通訊服務處理的訊息達45 991 779個，較上一年度增加達11%。至於航空氣象廣播服務，年內為航機提供氣象報告合共337 583次，數字與上年度相若。

## AIR TRAFFIC MANAGEMENT PLAN FOR THE PEARL RIVER DELTA (PRD) REGION

With the aim of full implementation of the enhancement measures as stipulated in the Pearl River Delta (PRD) Air Traffic Management (ATM) Plan, CAD maintained close liaison with various relevant parties. In the year, meetings were held with Mainland parties such as the Central & Southern Regional Administration (C&SR Administration) of the Civil Aviation Administration of China (CAAC), the Middle & South Regional Air Traffic Management Bureau (M&SR ATMB), People's Liberation Army Guangzhou Air Command (GAC) and Transport Commission of Shenzhen Municipality to discuss the issues related to PRD airspace management, as well as the future development of Hong Kong and Shenzhen airports. In January 2015, the Director-General of Civil Aviation accompanied the Secretary for Transport and Housing to visit the CAAC in Beijing and discussed issues related to PRD airspace as well as introduced the progress of the Three-Runway System (3RS) project of Hong Kong International Airport (HKIA). The CAAC expressed keen interest in the development of aviation in Hong Kong, and was supportive of the development of the 3RS. The CAAC also encouraged the air traffic control authorities of Mainland to maintain liaison and cooperation with that of Hong Kong.

CAD will continue to pursue via the Tripartite Working Group platform various enhancement measures in the PRD ATM Plan, such as the establishment of more new transfer points between Hong Kong and Guangzhou FIRs, and further enhancement to departure release mechanism for airports in the PRD Region.

## TELECOMMUNICATIONS SERVICES

The total number of messages handled by the Telecommunications Unit of the Division increased considerably in the year. On Aeronautical Fixed Service, 45 991 779 messages were handled, representing an increase of 11% as compared with last year. On Aeronautical Broadcast Service, the total number of weather messages broadcast to aircraft in flight amounted to 337 583, which was similar to that of last year.



## 航班時刻分配

按照國際航空運輸協會發布的《世界航班時刻準則》，香港機場航班協調辦公室以公平、中立、高透明度的方式分配機場航班時刻，以確保高效地使用現有的機場基礎設施。年內，於香港國際機場運作的航空公司及其他飛機營運者獲分配總共406 298個航班時刻，達到機場實際最高容量的96.7%。香港機場航班協調辦公室所處理的航班時刻申請數量，較去年同期增加接近20%。

## 安全管理系統

航空交通管理部繼續致力妥善推行安全管理系統，以期全面提升航空安全表現。為此，本部根據國際民用航空組織(國際民航組織)的條文

## SLOT ALLOCATION

In accordance with the International Air Transport Association's Worldwide Slot Guidelines, the Hong Kong Schedule Coordination Office (HKSCO) managed slot allocation in a neutral, transparent and fair manner with a view to ensuring the efficient utilisation of existing airport infrastructure. During the year, airlines and other aircraft operators at HKIA were allocated a total of 406 298 slots, reaching 96.7% of the airport maximum practical capacity. The number of slot applications processed by HKSCO also increased by nearly 20% compared with the same period last year.

## SAFETY MANAGEMENT SYSTEM (SMS)

ATMD continued putting in substantial efforts to enhance the overall aeronautical safety performance through effective implementation of its SMS. This is accomplished by proactive application of safety risk management and safety assurance in compliance with the provisions of the International Civil



和民航處的監管規定，積極推行安全風險管理和安全保證。在航空交通管理系統、儀器和程序作出重大變動前，本部會先評估安全風險和採取緩解措施。

為監察與衡量安全績效表現，本部每季編製安全績效目標報告和安全績效指標報告，並呈交航空交通管理標準組審閱。此外，為確保安全管理系統不斷改進，年內本部就各個主要職能範疇進行了四次內部安全審查。本部又繼續支援航空交通管理標準組，協助執行航空安全的監管工作。

此外，本部繼續為員工提供合適的安全管理系統培訓，推廣重視安全的文化。除空管的基本培訓和複訓單元外，本部還推行了規劃周全的安全管理系統培訓計劃，向所有空管人員灌輸安全管理概念。

## 飛航搜索和救援(搜救)服務

本部與區域搜救機關和國際搜救機關保持密切聯繫，並繼續參加本地和國際搜救會議及研討會，又不時派員參與機場和飛機緊急事故演習。

## 海外航空會議和研討會

年內，航空交通管理部繼續積極參與旨在促進亞太區以至全球航空交通管理發展的會議和研討會。當中大部分會議和研討會由國際民航組織、民用空中航行服務組織和其他航空機關舉辦。

Aviation Organization (ICAO) and regulatory requirement of the department. Safety risk assessment is conducted and mitigation processes are introduced before any significant changes to the air traffic management systems, equipment and procedures can be implemented.

Reports on Safety Performance Targets and Safety Performance Indicators were compiled and submitted to the Air Traffic Management Standards Office (ATMSO) on a quarterly basis for safety performance monitoring and measurement. To ensure the continuous improvement in safety performance, four internal audits were conducted in the year on different key functional areas of ATMD. In the meantime, the Division continued to provide necessary support to the ATMSO in facilitating regulatory oversight activities.

Besides, ATMD maintained its efforts to provide staff with appropriate SMS training in order to promote safety culture. A structured SMS training programme has been put in place to supplement the basic and recurrent air traffic control training modules in order to instil the concept of safety management to all air traffic control personnel.

## AERONAUTICAL SEARCH AND RESCUE (SAR) SERVICES

ATMD maintained close liaison with regional and international SAR authorities and continued to participate in local and international aeronautical SAR meetings and seminars. ATMD also attended airport and aircraft emergency drills.

## OVERSEAS AERONAUTICAL MEETINGS AND CONFERENCES

During the year, ATMD continued to actively participate in meetings, seminars and conferences which promoted the development of air traffic management in the region and globally. Most of the meetings and seminars were organised by the ICAO, Civil Air Navigation Services Organisation and other aviation authorities.