
CATHAY PACIFIC

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，提供航空導航服務，包括航空交通服務，通訊、導航及監察服務，航空電訊服務，航班協調，以及搜索和救援服務。

The Air Traffic Management Division (ATMD) is responsible for the provision of air navigation services, including air traffic services, communications, navigation, surveillance services, aeronautical telecommunication services, schedule coordination and search and rescue services within the Hong Kong Flight Information Region (HKFIR) as assigned by the International Civil Aviation Organization (ICAO).

航空交通**管理**
Air Traffic **Management**

航空交通運作

在本財政年度內，航空交通管理部處理了378 617架次在香港國際機場升降的國際及本地航班，並為223 775架次飛越香港飛行情報區的航班（當中包括50 299架次進出澳門國際機場的航班）提供航空交通管制（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6.4%，而飛越香港的航班數目則增加7.9%。

跑道升降容量

通過推行多項空域和航空交通管理優化措施，香港國際機場雙跑道的最高容量，已於年內遞增至每小時65架次。香港國際機場更先後於二零一三年八月十五日及九月二十四日錄得1 145架次的年度單日航班升降最高紀錄。

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會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255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。

AIR TRAFFIC OPERATIONS

During the financial year, ATMD handled 378 617 international and local aircraft movements at Hong Kong International Airport (HKIA). In addition, the division handled 223 775 flights overflying HKFIR (including 50 299 flights into and out of Macao International Airport). Compared with the previous year, the number of aircraft movements at HKIA and overflights increased by 6.4% and 7.9% respectively.

Runway Capacity

With the introduction of various enhancement measures in airspace and air traffic management, the handling capacity for the two runways at HKIA increased to a maximum of 65 movements per hour within the year. The 1 145 flight movements handled at HKIA on 15 August and 24 September 2013 was the single day record high of the year.

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, 255 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.

招聘和培訓空管人員

招聘和培訓見習航空交通管制主任

空管人員的招聘和培訓工作必須審慎規劃和管理，以應付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航空交通管制主任（空管主任），民航處通常會招聘見習航空交通管制主任（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。

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 SATCO, suitable candidates will go through a series of written aptitude test, occupational personality quiz 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.

雷達模擬器訓練。
Radar Simulator training.

航空交通管理部全日24小時為香港飛行情報區內的飛機提供航空交通管制服務。
ATMD provides round-the-clock ATC services to aircraft operating in HKFIR.

見習空管主任的培訓計劃經過周詳規劃，務使受訓學員的表現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，一般需時六年左右。

The training programme of SATCOs is carefully designed and arranged to match the established performance development benchmarks. It composes of staged training modules to ensure adequate consolidation before the next module. Each module includes training course with 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 six years.

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，以擴闊他們對空管運作的閱歷。年內，共有17名見習空管主任修畢海外課程。

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. During the year, 17 SATCOs had completed such overseas training.

見習空管主任在航空交通控制塔台模擬機進行訓練。
SATCOs receiving training at the ATC Tower Simulator.

航空交通管制大樓和後備塔台。
Air Traffic Control Complex and Backup Tower.

為加深公眾和求職人士對空管專業的認識，年內，民航處舉辦了就業講座，並安排學生參觀本處的設施。

To enable the public and potential applicants to better understand our ATC profession, CAD held career talks and arranged student visits to our facilities throughout the year.

截至二零一四年三月三十一日，空管主任的編制有297人，航空交通事務員則有114人。

As at 31 March 2014, the ATCO and Air Traffic Flight Services Officer establishment numbered at 297 and 114 respectively.

其他職級的空管培訓

ATC Training for Other Ranks

提供空管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。

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

年內，本部舉辦了46項空管培訓課程，受訓人員從中取得多項專業資格，獲發47項空管執照。此外，又為74名塔台管制員舉辦塔台管制複修課程，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。

During the year, 46 ATC training courses were conducted, leading to the issuance of 47 ATC ratings and the attainment of various professional ATC qualifications. Aerodrome control refresher training was conducted for 74 Aerodrome 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 horizon, and enable them to undertake more specialised duties as well as taking on management and supervisory responsibilities.

其他培訓

Other Training Offered

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。

Apart from the programmed in-house ATC training courses, ATMD also conducted the 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.

空管主任在航空交通控制塔當值。
ATCOs working at the Air Traffic Control Tower.

新空管／飛行程序

在天氣惡劣時更加準確估算跑道容量

每逢天氣惡劣，香港國際機場跑道的航班容量必然下降。空管人員要維持安全而高效的航空交通運作，實在並不容易。二零一四年年初，本部就雷暴及強側風對跑道容量的影響完成研究，其後把研究結果納入本處的跑道容量估算系統，以協助空管人員在天氣漸趨惡劣時適當地評估跑道容量可能受到的影響，從而保障在惡劣天氣下航空交通仍能安全有序、高效率地運作。

與區內主要機場交換航空交通運作的重要信息

二零一三年八月，香港民航處航空交通管理部與新加坡和泰國的空管部門合作，為區內三個樞紐機場（即香港國際機場、新加坡樟宜機場和曼谷素汪那普機場），推出協同信息交換機制。三地的空管中心利用電子信息平台甚或通過電話會議，交換航空交通運作的重要信息，例如當地天氣、機場處理着陸航機的容量、預計航班延誤的情況，以及為規管航空交通流量而採取的空管措施。這種區域之間的合作，有助協調管理次地區之內的航空交通流量，因應影響空管運作的重大事項（例如惡劣天氣）未雨綢繆，及時應對，從而確保這三個樞紐機場順利運作，提高效率。

性能導航措施

香港國際機場於二零一三年一月成功實施採用衞星導航技術的基本導航性能RNP 1標準儀表離場程序和標準儀表進場程序。同年九月，這兩套程序擴大至適用於途經香港空域進出澳門國際機場的航班。

NEW ATC / FLIGHT PROCEDURES

Enhancement in Runway Capacity Estimation during Adverse Weather Situation

Under the influence of inclement weather, the runway acceptance rate at HKIA will inevitably be adversely impacted. Maintenance of safe and efficient air traffic operation in these situations is always a challenging task to ATC. In early 2014, ATMD completed a study on the impact of thunderstorm and strong crosswind on the runway acceptance rate. The findings of the study were subsequently incorporated into CAD's runway capacity estimation system. The enhanced capability for controllers to recognise developing bad weather situation and make appropriate assessment of the possible impact on runway capacity would safeguard the safe, orderly and efficient air traffic operation under adverse weather conditions.

Exchange of Operationally Important Information with Other Major Regional Airports

In August 2013, ATMD of Hong Kong CAD introduced the Collaborative Information Exchange mechanism to enable the exchange of operationally important information related to the flows of air traffic amongst three major ATC authorities serving the three regional hub airports, namely HKIA, Changi Airport in Singapore, and Suvarnabhumi Airport in Bangkok. Information like local weather conditions, airport arrival capacity, expected air traffic delays, and any tactical measures imposed by ATC to regulate traffic flows are communicated amongst the ATC units via electronic means and, when necessary, via teleconference facility. Such collaboration allows a coordinated sub-regional Air Traffic Flow Management solution to pre-empt and address events of ATC operational significance, such as poor weather, in a timely manner, which in turn safeguards the smooth and efficient operations of the three hub airports.

Performance-Based Navigation Initiatives

Following the successful implementation of Basic-RNP 1 Standard Instrument Departure (SID) and Standard Instrument Arrival (STAR) procedures, which utilise satellite navigation technology at HKIA in January 2013, similar flight procedures were implemented for flights transiting Hong Kong airspace into and out of Macao International Airport in September 2013.

珠江三角洲（珠三角）地區航空交通管理計劃

年內舉行了兩次重要的高層會議。二零一三年十月，民航處與解放軍廣州軍區空軍司令部（廣州空軍）參謀長鄭元林將軍率領的代表團，於民航處總部會面，討論珠三角的空管及空域議題。會上，廣州空軍表明全力支持各項優化措施。同年十一月，國家民用航空局空中交通管理局、中南地區管理局、中南地區空中交通管理局、廣州空軍及民航處在廣州召開會議，檢視珠三角空域優化計劃，並重申支持推行空域優化工作。

得到內地有關單位的全力支持，珠三角地區空管規劃與實施三方工作組來年將繼續推展各項優化措施，包括提升珠三角地區機場離場航班放行的機制，即以電子化方式取代現時以話音進行協調，以及在香港與廣州飛行情報區之間增加一個空管移交點。

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

During the year, two important high level meetings were conducted. In October 2013, CAD had a discussion on PRD air traffic management and airspace issues at the CAD Headquarters with a People's Liberation Army Guangzhou Air Command (GAC) delegation led by Chief of Staff, General Zheng Yuanlin. GAC expressed their full support to the PRD enhancement initiatives. In November 2013, the Directors-General of the Air Traffic Management Bureau (ATMB) of the Civil Aviation Administration of China (CAAC), Central & Southern Regional Administration of CAAC, Middle & South Regional ATMB, GAC and CAD met in Guangzhou to review the PRD airspace enhancement plan. All participating authorities reaffirmed their support to the plan.

With the full support of relevant Mainland authorities, the PRD Air Traffic Management Planning and Implementation Tripartite Working Group will continue to pursue various enhancement measures for the PRD Region in the ensuing year such as an improved mechanism i.e. using electronic means in lieu of voice communication for coordinating the release of departures from the airports located in the PRD Region, and the establishment of an additional transfer point between Hong Kong and Guangzhou Flight Information Regions.

電訊服務

本部航空通訊組年內處理的資訊量明顯增加，其中通過固定航空通訊服務處理的信息達41 408 515個，較上一年度增加 8%。至於航空氣象廣播服務，年內為航機提供氣象報告合共336 161次，數字與去年相若。

TELECOMMUNICATIONS SERVICES

The total number of messages handled by the Telecommunications Unit of ATMD increased considerably in the year. On Aeronautical Fixed Service, 41 408 515 messages were handled, representing an increase of 8% as compared with last year. On Aeronautical Broadcast Service, the total number of weather messages broadcast to aircraft in flight amounted to 336 161, which was similar to that of last year.

航班時刻分配

香港機場航班協調辦公室繼續按照國際航空運輸協會發布的《世界航班時刻準則》，以中立、高透明度和公平的方式，分配航班時刻，以確保高效地使用現有的機場資源。年內，航班協調辦公室分配接近390 000個於香港國際機場運作的航班時刻。

SLOT ALLOCATION

In accordance with the International Air Transport Association's Worldwide Slot Guidelines, the Hong Kong Schedule Coordination Office (HKSCO) continued to allocate slots in a neutral, transparent and non-discriminatory manner in order to ensure the efficient utilisation of existing airport resources. During the year, the HKSCO had allocated close to 390 000 slots for operations at HKIA.

安全管理系統

航空交通管理部繼續致力推行和優化安全管理系統，確保提供安全的航空交通服務。安全管理系統提供有效方法查明安全隱患，採取行動減低安全風險，監測安全績效並不斷改進。本部的安全風險管理和安全保證工作，全都符合國際民航組織的條文和民航處的監管規定。在對航空交通管理系統、儀器和程序作出重大變動前，本部會先評估安全風險並採取緩解措施。

至於監測與衡量安全績效方面，本部遵照規管要求，定期並適時向航空交通管理標準組提交安全績效目標報告和安全績效指標報告，以便監管。本部按照規定，按季度提交了四輪目標和指標報告。此外，為使安全管理系統精益求精，本部在報告期內就各個主要職能範疇進行了四次內部安全審查，同時繼續為航空交通管理標準組提供所需支援，協助安全監管工作。

SAFETY MANAGEMENT SYSTEM (SMS)

ATMD continued putting in substantial efforts to maintain a high level of safety in the provision of air traffic services through the implementation and continuous optimisation of its SMS. The SMS provides effective means to identify safety hazards, implement actions to reduce safety risks, monitor safety performance and achieve continuous improvement in safety performance. Safety risk management and safety assurance are applied in accordance with ICAO provisions and CAD regulatory requirements. Safety risk assessment are conducted and mitigation processes are introduced before any significant changes to the air traffic management systems, equipment and procedures can be implemented.

With respect to safety performance monitoring and measurement, ATMD complied with the regulatory requirements by timely and regularly submitting to the Air Traffic Management Standards Office (ATMSO) the reports on Safety Performance Targets and Safety Performance Indicators for regulatory oversight. Four rounds of submission were presented on a quarterly basis as required. To ensure the continuous improvement in safety performance, four internal audits were conducted on different key functional areas of ATMD within the report period. In the meantime, the division continued to provide necessary support to the ATMSO in facilitating regulatory oversight activities.

本部又繼續為同事提供合適的安全管理系統培訓，以推廣安全文化。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，向所有同事灌輸安全管理概念。

In promoting safety culture, ATMD maintained its efforts to provide staff with appropriate SMS training. A structured SMS training programme has been put in place to supplement the basic and recurrent ATC training modules in order to instil the concept of safety management to all staff.

搜索和救援（搜救）服務

年內，本部繼續為同事舉辦搜救簡報會，又為已取得搜救資格的空管主任提供複修訓練，讓他們以書面練習形式重溫搜救知識。為掌握搜救服務在世界各地的最新發展，本部與區域搜救機關和國際搜救機關保持密切聯繫，又繼續參加本地和國際搜救會議，並派員參與機場和飛機緊急事故演習。

SEARCH AND RESCUE (SAR) SERVICES

During the year, ATMD continued the efforts to provide SAR briefings to staff and provided refresher training to all SAR qualified ATCOs in the form of a paper exercise to refresh their SAR knowledge. To keep abreast of latest global development on SAR services, ATMD maintained close liaison with regional and international SAR authorities and continued to participate in local and international SAR meetings and also attended airport and aircraft emergency drills.

海外空管會議和研討會

年內，航空交通管理部積極參與由國際民航組織、民用空中航行服務組織和其他航空機關舉辦的海外會議及研討會，交流和推動合作，促進亞太區以至全球航空交通管理的持續發展。

OVERSEAS ATC MEETINGS AND CONFERENCES

During the year, the division actively participated in overseas meetings, seminars and conferences organised by ICAO, Civil Air Navigation Services Organisation and other aviation authorities to exchange views and foster cooperation with our international counterparts. This active networking process contributed to the continuous development of air traffic management regionally and globally.

解放軍廣州軍區空軍司令部鄭元林參謀長率領代表團到訪民航處總部，就珠三角空域議題與民航處進行討論，並參觀新空管設施。

Chief of Staff of Guangzhou Air Command of the People's Liberation Army, General Zheng Yuanlin, led a delegation to visit CAD Headquarters. The delegation had a discussion on PRD airspace issues with CAD and a tour of the new ATC facilities.