航空交通管理
Air Traffic Management

航空交通管理部負責在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，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 (CNS) services, aeronautical telecommunication services and search and rescue services within the Hong Kong Flight Information Region (HKFIR) as assigned by the ICAO.

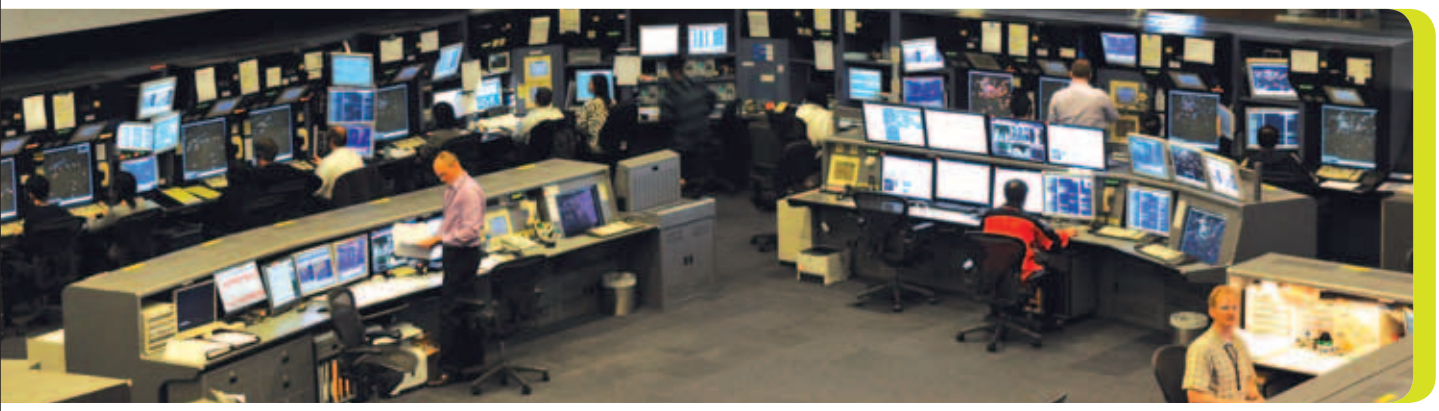
航空交通管理
Air Traffic Management

航空交通運作

本財政年度內，航空交通管理部處理了339 481架次在香港國際機場升降的國際及本地航班，並為190 458架次飛越香港飛行情報區的航班（當中包括39 797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顯著增加6.8%，而飛越香港的航班數目亦大幅增加13.85%。

AIR TRAFFIC OPERATIONS

During the financial year, ATMD handled 339 481 international and local aircraft movements at the HKIA. In addition, the Division handled 190 458 flights overflying the HKFIR (including 39 797 flights into and out of the Macao International Airport). Compared with the previous year, the number of aircraft movements at the HKIA and overflights increased at a phenomenal rate of 6.8% and 13.85% respectively.



航空交通管制中心。
Air Traffic Control Centre.

跑道升降容量

隨着空域和航空交通管理改善措施的推行，香港國際機場雙跑道每小時的運作容量，由二零一一年三月的61班遞增至二零一一年十月的62班，在二零一二年三月再遞增至63班。香港國際機場更於二零一二年一月二十日錄得1 057架次航班升降，刷新單日航班升降數目的最高紀錄。

Runway Capacity

With the introduction of enhancement measures in airspace and air traffic management, the declared capacity per hour for dual runway operations at the HKIA progressively increased from 61 movements in March 2011 to 62 movements in October 2011, and 63 movements in March 2012. 1 057 movements were handled at the HKIA on January 20, 2012, setting a new daily flight movement record.

航空交通管制主任執照考試和覆核

為維持高水準的空管運作，本部的訓練及安全組每年安排舉行航空交通管制主任（空管主任）的各類空管執照考試。年內，就塔台管制、進場管制和區域管制三個空管組別進行的考試共有188次。此外，本部亦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、導師證書、搜索和救援（搜救）證書和流量管制證書。

Annual Examinations and Revalidations of Air Traffic Control Officer Ratings

To maintain a high standard in air traffic control (ATC) operations, the Training and Safety Section of ATMD carried out annual practical examinations on ATC ratings held by Air Traffic Control Officers (ATCOs). In the year, a total of 188 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, Instructor Certificates, Search and Rescue Certificates and Flow Control Certificates to officers who had attained their respective 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

為應付預期的航空交通增長及人手需求，空管人員的招聘和培訓工作必須審慎規劃，嚴謹管理。由於本地就業市場欠缺具備所需資歷的空管主任，一般而言，民航處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。合資格的申請人須通過一連串甄選步驟，包括才能測驗筆試、工作性格測驗及面試。經初步選出的申請人會在評估中心接受更深入的認知能力測試及性格評估。見習空管主任由入職至全面取得專業資格，必須接受嚴格訓練，過程周密。培訓計劃各階段的訓練單元必須周詳規劃，確保見習空管主任的表現可達到既定的進展基準。為符合簽發空管主任執照的要求，各訓練單元內容均包括課堂學習，以及利用空管雷達模擬器或控制塔模擬機進行的模擬訓練。只有通過這兩階段訓練的考核，受訓人員才可在合資格的導師督導下，處理「實況」航空交通，熟習所需技能。受訓人員須再通過另一次最終的「實況」考核，才准獨立工作。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，一般需時五年。

RECRUITMENT AND TRAINING OF ATC STAFF

Recruitment and Training of Student Air Traffic Control Officers

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, ATCOs are normally recruited as Student Air Traffic Control Officers (SATCOs) to receive specialised training for progression to ATCOs. Suitable candidates will go through a series of screening steps - written aptitude test, occupational personality quiz and interview. Shortlisted candidates will then attend an Assessment Centre for a more in-depth assessment on cognitive ability and personality traits. SATCOs receive intensive training from entry until the attainment of full professional qualifications. The training programme is a comprehensive process requiring carefully staged training modules to match the established performance development benchmarks. To fulfil ATCO licensing requirements, each module involves classroom lectures and practical training in the ATC Radar Simulator or Aerodrome Simulator. Only when trainees have passed these two training stages can they progress on to handle "live" traffic under the guidance of qualified on the job training instructors to consolidate the necessary skills. After passing the final validation check, the officer will then 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 years.

航空交通管理部在香港飛行情報區內，提供航空導航服務。
ATMD is responsible for the provision of air navigation services in the HKFIR.

本部同事在航空交通控制塔模擬機接受訓練。
Divisional staff receiving training at the Air Traffic Control Tower Simulator.

見習空管主任到海外接受飛行訓練。
SATCOs attended flying training overseas.

一名空管主任在航空交通控制塔當值。
An ATCO staff working at the Air Traffic Control Tower.

年內，有24名見習空管主任到海外修讀基本空管課程和接受飛行訓練。海外培訓旨在增進受訓人員對空管程序、氣象、雷達操作、飛行原理等方面的航空知識，以及促進個人發展，擴闊他們對空管運作的閱歷。

為加深公眾和求職人士對空管行業的認識，年內，民航處舉辦就業講座，並定期安排學生參觀本處的設施。

截至二零一二年三月三十一日，空管主任的編制有279人，航空交通事務員則有107人。

其他職級的空管培訓

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及在職培訓。

Within the year, 24 SATCOs attended basic ATC courses and flying training overseas. The overseas training is to enhance their aviation knowledge in ATC procedures, meteorology, radar operations, principles of flight, and facilitate personal development as well as broaden exposure to various aspects of ATC operations.

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

As at March 31, 2012, the Air Traffic Control Officer and Air Traffic Flight Services Officer establishment numbered at 279 and 107 respectively.

ATC Training for Other Ranks

Provision of ATC training is one of the major tasks of ATMD. Training courses and on-the-job training activities were conducted intensively throughout the year.

年內，本部舉辦了43項空管培訓課程，受訓人員從中取得多項專業資格，獲發42項空管執照；又為76名在職進場管制主任及73名區域管制主任舉辦雷達管制複修課程，以確保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，都能應付裕如。此外，本部亦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、搜救、空管事故調查、飛機意外調查、安全審計、飛行程序設計、教學技巧及人力資源管理等方面的培訓，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, 43 ATC training courses were conducted, leading to the issuance of 42 ATC ratings and the attainment of various professional ATC qualifications. Radar control refresher training courses were conducted for 76 Approach Control and 73 Area Control controllers respectively. 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 on Safety Management Systems, Operations of Modern Aircraft, Search and Rescue, ATC Incident Investigation, 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，本部亦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 an Air Traffic Management Introductory Course in conjunction with the Hong Kong Civil Aviation Training Centre for industry partners and the public for a better appreciation of air traffic management functions. The course is conducted regularly and has been well received.

新的空管程序

NEW ATC PROCEDURES

實施性能導航固定半徑轉向噪音消減標準儀表離場程序

Implementation of Performance-Based Navigation (PBN) Noise Mitigating Standard Instrument Departure (SID) Procedure Utilising Radius-to-Fix (RF) Turn

為改善飛機於07號跑道起飛後飛行路線的準確度和縮小飛機噪音影響的範圍，香港國際機場於二零一二年二月九日，在PORPA及ROVER轉向點實施新的性能導航固定半徑轉向噪音消減標準儀表離場程序。新離場程序運用現代飛機內置的先進導航設備，確保飛行精準。飛機在使用其他離場程序時，轉向航迹會受風向影響而出現偏差。若飛機使用新離場程序轉向，即以固定的半徑轉向，則在不同風向下亦能飛出一致、準確度極高的航迹。因此，新離場程序可縮小飛機噪音影響的範圍，減低航道附近民居受到的整體噪音滋擾。

To improve flight track keeping accuracy and reduce the noise footprint of aircraft departing from Runway 07, new PBN noise mitigating SID procedures utilising RF turn at turn points PORPA and ROVER were successfully implemented on February 9, 2012. The new SID procedures make use of state-of-the-art on-board equipment of modern aircraft to achieve accurate navigation. Whilst the flight paths of aircraft using other departure procedures may vary over the turn points under different wind conditions, aircraft utilising the RF SIDs would turn with a fix radius, thereby achieving accurate flight paths consistently irrespective of ambient wind conditions. As a result, the noise footprint of aircraft flying the RF SIDs would be more confined thus minimising the overall noise disturbance to residents living near the flight path.

香港南面飛行情報區空域結構重組

香港南面飛行情報區空域及相關航線，已於二零一一年四月七日重組。這次空域重組包括增設一個中部區域雷達管制扇區，以分擔其他區域雷達管制扇區的工作量；增設新航線以分流過境及抵港航機；以及增設新的等待空域。空域重組後大大提升了整體的空管運作效率。

Airspace Restructure in the Southern Hong Kong FIR

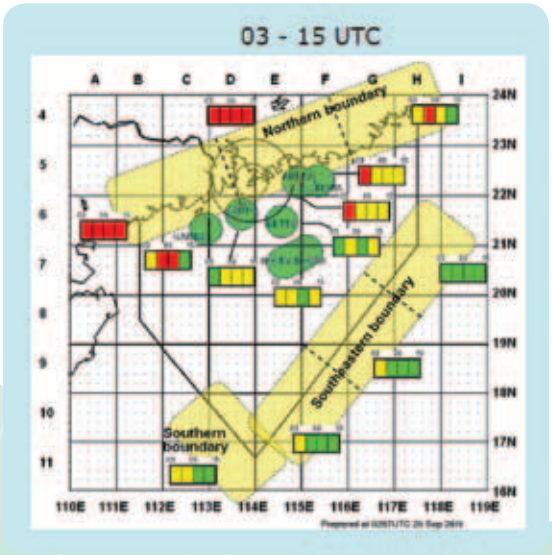
The southern HKFIR and the associated air routes were successfully restructured on April 7, 2011. Changes included the establishment of a new area radar sector to share the workload of other radar control sectors, implementation of new air routes to segregate overflights with Hong Kong arrivals and the establishment of new holding patterns. The restructure greatly enhanced overall ATC operation efficiency.

香港國際機場抵港航班容量通報計劃

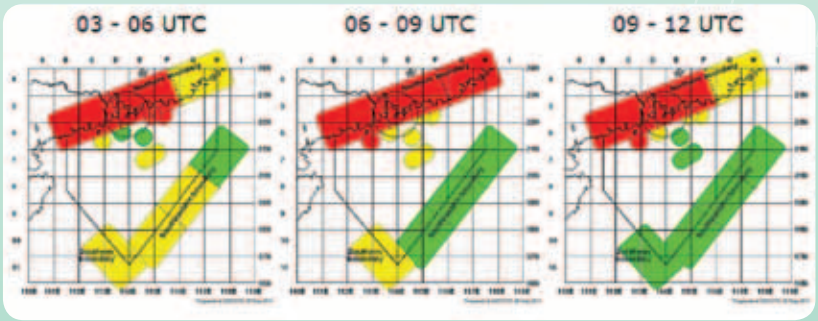
為進一步提升香港飛行情報區內的空管運作順暢，本部於二零一一年十月二十六日，推出抵港航班容量通報計劃，讓航空公司和鄰近地區的空管中心預早掌握香港國際機場的抵港航班容量資料。

Capacity Notification Scheme for Arrivals at the HKIA

To further enhance ATC operations within the HKFIR, ATMD launched the Capacity Notification Scheme on October 26, 2011 to provide early notification of projected arrival acceptance capacity at the HKIA to airline operators and neighbouring ATC centres.



香港天文台提供予民航處作空管用途的天氣資料。
Meteorological information provided by HKO to CAD for supporting air traffic control operations.



民航處與香港天文台合作，年內在空管中心設置新設施和儀器，包括網絡視像會議設備、重要對流天氣監察及預測系統等，向空管人員顯示未來12小時機場終端扇區的天氣預報。這些氣象資料及空管運作參數繼而會輸入由本部研發的「抵港航班容量計算機」軟件，以計算香港國際機場未來八小時的抵港航班容量。容量通報訊息會由本部以電郵形式，每天兩次定時發送到相關機構，包括台北區域管制中心、日本福岡航空交通管理中心、機管局以及各航空公司。在向業界伙伴提供有用的飛行資訊方面，事實證明新通報計劃成效卓著。

Through the collaboration between the CAD and Hong Kong Observatory (HKO), new facilities and equipment were installed in the Air Traffic Control Centre within the year. The new equipment included web-based video conference facility and the Significant Convection Monitoring and Forecast System that can present terminal weather forecast for the next 12 hours to ATC. The meteorology information as well as ATC operational parameters are then fed into an in-house developed software called "Arrival Capacity Calculator", which derives the Arrival Acceptance Rate of the HKIA for the next eight hours. A capacity notification message would then be compiled and despatched by ATC twice a day via email to involved stake holders including Taipei Area Control Centre, Fukuoka Air Traffic Management Centre, AAHK and airline operators. The new scheme proved to be very effective for sharing aeronautical information with our operation partners.

珠江三角洲（珠三角）地區航空交通管理計劃

年內，香港民航處、國家民用航空局與澳門民航局組成的珠三角地區空管規劃與實施三方工作組，繼續研究和實施改善措施，以進一步優化珠三角地區的空域設計和空中交通管理。

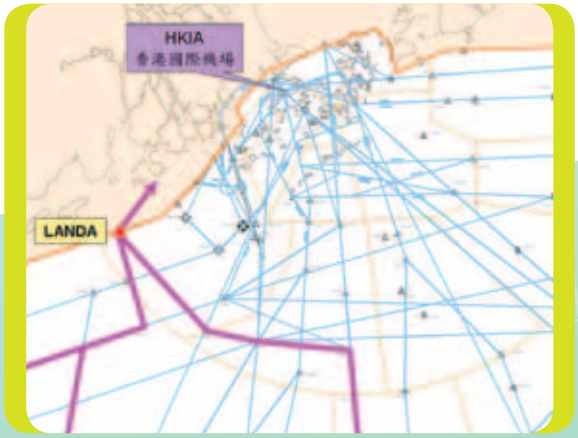
香港民航處與國家民用航空局共同努力，先後在二零一一年四月七日優化珠海終端區，以及在同年九月二十二日在香港與廣州空域間增設一個新的空管移交點，稱為「LANDA」。新增的移交點及相關航線，大大減低香港國際機場附近最繁忙空域要處理的航空交通複雜程度，進一步提升珠三角地區的航空交通管理效率。

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

During the year, the PRD Air Traffic Management Planning and Implementation Tripartite Working Group formed by the Hong Kong CAD, the Civil Aviation Administration of China (CAAC), and the Macao Civil Aviation Authority continued to study and implement enhancement measures to further rationalise the airspace design and air traffic management in the PRD region.

With concerted efforts between Hong Kong CAD and the CAAC, the revised Zhuhai Terminal Area and a new ATC handover point between Hong Kong and Guangzhou airspace were successfully implemented on April 7, 2011 and September 22, 2011 respectively. The new handover point, named LANDA, and its associated routes significantly reduced the complexity of air traffic handling in the busiest airspace sector around the HKIA, further enhancing air traffic management efficiency in the PRD region.

珠三角地區空管規劃與實施三方工作組定期舉行會議。
The PRD Air Traffic Management Planning and Implementation Tripartite Working Group holds meetings regularly.



香港與廣州空域新增的移交點「LANDA」。
The new handover point "LANDA" between Hong Kong and Guangzhou airspace.

電訊服務

隨着航班架次增長強勁，本部航空通訊組年內處理的訊息量顯著上升。通過固定航空通訊服務處理的訊息達38 238 351個，較上一年度增加10.7%。在航空氣象廣播服務方面，年內為飛行中的航機提供的天氣訊息合共336 161個，較上一年度增加1%。

TELECOMMUNICATIONS SERVICES

As a result of robust growth in flight movements in the year, the total number of messages handled by the Telecommunications Unit of the Division increased significantly. On Aeronautical Fixed Service, 38 238 351 messages were handled in the year. This represented an increase of 10.7% as compared with last year. On Aeronautical Broadcast Service, the total number of weather messages broadcast to aircraft in flight increased by 1% to 336 161.

安全管理系統

本部致力推行安全管理系統，以期全面提升安全表現。為此，本部根據國際民航組織的條文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，本部會先進行安全風險評估和採取緩解措施。此外，本部定期進行安全評估和審查，以確保各個主要職能範疇內的所有層面都符合安全管理系統的要求。年內，本部進行了四次內部安全審計。

SAFETY MANAGEMENT SYSTEM

The Division endeavours to enhance the overall safety performance through effective implementation of Safety Management System (SMS). This is accomplished by proactive application of safety risk management and safety assurance in compliance with ICAO provisions and CAD regulatory requirements. Safety risk assessments are conducted and mitigation processes introduced before any significant changes to the air traffic management systems, equipment and procedures can be implemented. In addition, regular safety assessments and safety surveys are conducted to ensure the compliance of SMS principles at all levels in every major functional area. Four internal audits were carried out during the report period.

本部持續為員工提供安全管理系統訓練，以加深他們對安全管理的認識，並充分掌握安全管理系統的操作技巧。年內，本部邀請了歐洲一家培訓機構在香港舉行兩個安全風險評估培訓課程，一個供前線員工參加，另一個供管理層人員參加。

On-going SMS training is provided to staff to enhance their understanding of safety management and skills in performing SMS related activities. In this connection, an external training service provider from Europe was engaged to conduct two training courses locally on Safety Risk Assessment, one for working level staff while the other for management level staff.

搜索和救援服務

年內，共有16名空管主任完成搜救培訓課程，取得搜救資格。所有已取得搜救資格的空管主任亦完成了一次書面練習，以重溫搜救知識。此外，本部繼續派員參與機場和飛機緊急事故演習及相關會議。

SEARCH AND RESCUE (SAR) SERVICES

Within the year, 16 ATCOs completed SAR training and obtained their SAR qualifications. All SAR qualified ATCOs also finished a paper exercise to refresh their SAR knowledge. Besides, the division continued to participate in the airport and aircraft emergency drills and associated meetings.

海外空管會議和研討會

年內，航空交通管理部繼續積極參與由國際民航組織、民用航空導航服務組織及其他航空機關舉辦的海外會議和研討會，藉此交流和推動合作，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 continued to actively participate in overseas meetings, seminars and conferences organised by the 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.

控制塔台為航機提供全日24小時的航空交通管制服務。
The Air Traffic Control Tower provides round-the-clock air traffic control services to aircraft operating at the airport.