

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及負責區內提供航空交通管制、航行資料及飛機事故警報等服務。

新香港國際機場投入服務超過兩年後，本處認為是適當時機對本港的空管系統進行一次全面的檢討，因此委託英國民航局於十二月檢討香港的空管系統。檢討小組得出的結論是：本港空管系統的運作不但安全，水平也很高。小組又提出了非常有用的建議，有助本處在管理空管事務方面保持先進的水平。本處對於這些建議正作出積極回應，而本處的跟進行動將可令香港繼續提供高水平的空管服務，以及應付迅速增長的航空交通。

1. 航空交通量

本部在年內共處理了198 385架次在香港國際機場升降的國際及本地航班，並為85 479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9.3%和14.9%，這跟香港及東南亞與東北亞國家經濟情況有所改善有關。

在累積更多雙跑道運作經驗後，於二零零一年三月起的繁忙時段，即由中午十二時至下午六時，香港國際機場跑道容量由每小時45架次增至47架次。



致力提供 **安全而有效率**
的航空運輸系統

COMMITTED TO PROVIDE A **SAFE** AND
EFFICIENT AIR TRANSPORT SYSTEM

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) and Area of Responsibility (AOR) as assigned by the International Civil Aviation Organization (ICAO).

The ATC operation was reviewed by the United Kingdom Civil Aviation Authority (UKCAA) in December, as CAD believed that it was timely to conduct a comprehensive review on Hong Kong's ATC system after more than two years of operation at the new Hong Kong International Airport (HKIA). The conclusion made by the UKCAA Review Team was that the Hong Kong ATC system is safe and of a high standard. The Review Team made very useful recommendations to assist CAD in maintaining state-of-the-art ATC services. CAD is responding positively to these recommendations. Our follow-up actions will enable Hong Kong to continue to provide high standard ATC services and to cater for the rapid growth in air traffic.

I. AIR TRAFFIC

During the year, the Division handled a total of 198 385 international and local aircraft movements at HKIA and 85 479 flights overflying the Hong Kong FIR and AOR. Comparing with the previous year, the number of aircraft movements at HKIA and overflights increased by 9.3 per cent and 14.9 per cent respectively. The growth in air traffic was a result of the improved economic situations in Hong Kong as well as in the Southeast and Northeast Asian countries.



航空交通管制員在模擬指揮塔台接受培訓。
Air traffic controllers receive training at the tower simulator.



II. 招聘及培訓航空交通管制人員

民航處在獲得公務員事務局及庫務局批准後，於二零零零年七月再次招聘航空交通管制人員。五位新聘航空交通事務員於二零零一年二月入職。截至二零零一年三月三十一日，本部共有220位航空交通管制主任及102位航空交通事務員。招聘工作仍然按照計劃在進行。本部繼續積極提供訓練課程和在職培訓，應付人力需求，讓有關人員持續接受訓練，以及步向本地化。年內，本部為航空交通管制主任及航空交通事務員分別提供共30項和10項專業課程，接受訓練的人員分別有437和53人次，同期並有19名航空交通管制主任考獲各類管制執照。訓練組亦開始改進現有培訓課程計劃及加入有關人為因素的科目，以配合國際民航組織的標準及建議。

III. 航空交通管理

為了確保珠江三角洲地區的航空交通服務安全及有效率，本處與國內及澳門的民航管理部門保持緊密聯繫，不斷對操作程序作出檢討和評估。年內，有關會議共舉行了10次，檢討區內包括香港、深圳、珠海及澳門各機場之間的空管事務。根據會上達成

的協議，新空管和飛行情形已定出或予以修訂，適用於香港和鄰近機場。

在本報告年度，民航處致力籌備由國際民航組織統籌之南中國海修正航路結構及重劃飛行空域的改革計劃。在新安排下，國際民航組織按照一項應變協議而分配予香港之負責區將會取消。南中國海的中部將會建立一個新的三亞負責區，提供空中交通服務，而新航路結構將會提高航路容量及改善亞太區空管運作。因應南中國海空域變動，香港將會在經修正後的飛行情報區範圍建立新的飛行航路。新安排會在二零零一年十一月一日起施行。

本處在二零零零年十二月委託英國民航局一組專家進行了一次全面的香港空管系統檢討。檢討小組的結論是香港空管系統現時的運作不但安全，水平也很高。本處已着手實施小組的各項建議，例如成立空管安全管理系統和改善其他系統等。建議措施還包括檢討空域、航線結構及有關的空管程序，引進以值班隊伍為基礎的管理模式，在航空交通管理部內建立安全及質量保證組，以及建立一個獨立的空管安全規管機構。



After gaining more operational experience on dual runway operations, the runway capacity was increased from 45 to 47 movements per hour during the peak hours between noon and 6 p.m. in March 2001.

II. RECRUITMENT AND TRAINING OF AIR TRAFFIC CONTROL STAFF

Recruitment of ATC staff resumed in July 2000 after special approval was obtained from the Civil Service Bureau and the Finance Bureau. Subsequently, five new recruits joined the Department as Air Traffic Flight Services Officers (ATFSOs) in February 2001. As at March 31, 2001, the numbers of Air Traffic Control Officers (ATCOs) and ATFSOs were 220 and 102 respectively. Recruitment efforts are continuing as scheduled. Courses of instruction and on-the-job training activities continued to be intensive all year round with the aim of producing qualified personnel for operational manning, staff continuation training and localisation. In the period, 30 and 10 courses were conducted for 437 ATCOs and 53 ATFSOs respectively with 19 officers obtaining their ab-initio ATC Ratings. The Training Unit has also embarked on new initiatives to revamp existing training course plans and a new module on human factors training in ATC was introduced in line with the standards and recommendations of ICAO.

III. AIR TRAFFIC MANAGEMENT

In order to ensure the safe and efficient provision of air traffic services in the Pearl River Delta area, the Department continued to review and evaluate operational procedures in close liaison with civil aviation authorities in the Mainland and Macau.



航空交通管制員為進出香港的飛機提供服務。
Air traffic controllers providing service to aircraft in and out of Hong Kong.

During the period, 10 meetings with these authorities were held to review the integrated air traffic management plan for airports in the area, including Hong Kong, Shenzhen, Zhuhai and Macau. As a result of the agreements reached, new ATC and flight procedures for Hong Kong and neighbouring airports have been established or refined.

During the year, CAD undertook extensive preparation work for the implementation of a revised route structure and reorganisation of the airspace over the South China Sea that was coordinated by ICAO. Under the new arrangement, the Hong Kong AOR assigned by ICAO under a contingency arrangement will be suspended. A new Sanya AOR will instead be established for the provision of air traffic services over the middle portion of the South China Sea; and a new route structure will be in place to enhance the air route capacity as well as ATC operations in this region. As a result of these changes, new routes will be established within the revised Hong Kong FIR. The new arrangement will come into effect on November 1, 2001.

In December 2000, CAD commissioned a team of experts of UKCAA to conduct a comprehensive review on our ATC operation. The review concluded



用以搜索及救援的飛機在香港國際機場展出。
Display of search and rescue aircraft at HKIA.

IV. 搜索及救援

每年一度之搜索及拯救演習(搜救演習)於二零零零年十二月五至八日成功舉行。這項演習的主旨為(一)測試香港搜救系統之效率；(二)為本部專責搜救職務的人員提供機會，熟習執行及協調搜救的技巧；以及(三)促進本地及外地搜救工作人員交流相關經驗，加強工作關係。

除民航處外，積極參與是次搜救演習的本地單位包括中國人民解放軍駐香港部隊、香港警務處、海事處、消防處、政府飛行服務隊、香港天文台和民眾安全服務處。美國空軍、海軍及海岸防衛隊的搜救單位也有參與演習。此外，國內、澳門、馬來西亞、泰國、新加坡及越南的搜救組織亦有派專家及觀察員到港觀摩。

是次搜救演習分為三個主要部分。各搜救單位先在香港國際機場展示搜救飛機及器材。透過這展示，搜救人員可清楚認識搜救器材的功能，方便訂定合適的搜救計劃。第二部分是示範救援人員從一架C130飛機跳傘至拯救區，以及由兩架直升機在南丫島南面水域示範拯救行動。最後部分是模擬一架飛機於香港以南約八十海哩失事，搜救組織派遣三架飛機和兩艘船隻在空中及海上進行大規模搜救。

V. 精密跑道監察系統

經過連串研究及評估，精密跑道監察系統已在二零零一年三月二十二日正式啟用。此系統應用高速掃描及在高解象彩色顯示屏準確顯示飛機方位資料及預計飛機航道，提供飛機在最後進場至平衡跑道時的準確方位，提升現行飛行程序的安全及可靠性。30多位航空交通管制主任現已完成所需訓練，並獲發證書使用此系統。本處將會繼續進行多方面探索，研究此系統的其他用途，以進一步提升航空安全及運作效率。



航空交通管制大樓(左)和作備用的大樓(右)。備用大樓頂部裝有精密跑道監察系統。
Air Traffic Control Complex (left) and the one used for backup purpose (right).
The Precision Runway Monitor was installed at the top of the backup complex.



that the current ATC operation in Hong Kong was safe and of a high standard. Their recommendations for the implementation of a safety management system in ATC and other system enhancement are being pursued actively. These include review of the airspace, route structures and associated ATC procedure, introduction of watch-based management, establishment of a Safety and Quality Section within the Air Traffic Management Division, and establishment of an independent ATC safety regulator.

IV. SEARCH AND RESCUE

The annual Search and Rescue (SAR) Exercise was successfully conducted from December 5 to 8, 2000. The main objectives of this annual exercise were: (i) to test the effectiveness of Hong Kong SAR system; (ii) to provide ATC SAR personnel an opportunity to practise their skills in conducting and co-ordinating SAR operations; and (iii) to provide a forum for local SAR personnel as well as the overseas counterparts to share experience and to foster working relationship.

In addition to the active participation by CAD and other local SAR agencies including the Hong Kong Garrison of the People's Liberation Army, Hong Kong Police Force, Marine Department, Fire Services Department, Government Flying Service, Hong Kong Observatory and Civil Aid Service, SAR units of the United States Air Force, Navy and Coast Guard also participated in the exercise. Experts and observers from SAR organisations of the Mainland, Macau, Malaysia, Philippines, Singapore, Thailand and Vietnam were also present at the exercise.

The exercise was divided into three major parts. The first part was a display of SAR aircraft and their equipment at HKIA. Through the display,

SAR personnel had a good appreciation of the capability of the tools available for SAR missions. It was followed by a demonstration of dropping of rescue personnel from a C130 aircraft and



rescue operations in the waters south of Lamma Island by two helicopters. The final part of the exercise was a comprehensive air and sea search by three SAR aircraft and two vessels for a target that was simulated to be an aircraft that had crashed and fell into the sea about 80 nautical miles to the south of Hong Kong.

V. PRECISION RUNWAY MONITOR

After a series of study and evaluation, the Precision Runway Monitor (PRM) was put into operational use on March 22, 2001. With a fast update rate and superior target presentation in terms of accuracy, resolution and track prediction, the system serves to enhance the integrity of the existing flight procedures by providing accurate position information to pilots on final approach to the parallel runways. More than 30 ATCOs have completed the training required and were certified to operate the system. Further studies will continue to be carried out to explore other applications of the PRM system with a view to further enhancing flight safety and operational efficiency.