





航空交通工程及標準部 Air Traffic Engineering and Standards Division

航空交通工程及標準部負責設計、規劃、統籌和提供空管系統、雷達、導航儀器和通訊設備，並監管香港空中航行服務(包括進行航空事故調查)，簽發空管主任執照及相關級別。年內，本部成立培訓及發展事務辦公室，統籌部門的培訓事宜。

The Air Traffic Engineering and Standards Division (AESD) is responsible for the design, planning, coordination, and provision of ATC systems, radar, navigational aids, and communication facilities for Hong Kong ATC operations. The Division is also responsible for regulating Hong Kong air navigation services including conducting incident investigation, and issuing air traffic controller licences and the associated air traffic control ratings. During the year, the Training and Development Office was established under the Division to coordinate training and development matters within the Department.

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航空交通工程及標準

年內，本部繼續致力維持高水準、穩定可靠及優秀的空管系統，以支援安全及高效率的航空交通服務。新空管中心空管系統的招標工作和民航處新總部大樓資訊及通訊科技設施的採購工作，進展良好。

衛星通訊、導航及監察／航空交通管理系統的發展計劃現正穩步推展，以便早日發揮系統的功能，提升空管運作效率及飛行安全。經測試並提前採用的新系統包括抵港航機排序系統、電子飛行進程單系統、廣播式自動相關監察和飛行計劃衝突提示系統等。

本部繼續積極推行新的資訊科技應用系統，提升電腦網絡和基建設施，以支援本處電子化服務和數碼政府的目標。二零一零年十一月，本部資訊科技管理組憑優質服務成功獲頒國際標準化組織ISO 9001:2008品質管理體系認證。

更換航空交通管制系統

為應付航空交通預期的增長需求，航空業的擴展和保持香港作為國際及區域航空中心的地位，民航處於二零零七年五月獲得撥款，把現有系統更換為高效能及配備最新功能的空管系統，以提升香港飛行情報區內航空交通服務的效率。

年內，已批出三項主要空管系統的合約，包括通訊主幹系統、航空交通管理系統和通訊及記錄系統。餘下四項主要系統的招標工作進展良好，合約將於二零一一年年底前批出。

Air Traffic Engineering and Standards

During the year, the Division continued its efforts in maintaining a high standard, stable, reliable and outstanding ATC system to support safe and efficient air traffic services. Good progress was made in the tendering of ATC system for the new ATC Centre and the procurement of Information & Communication Technology (ICT) facilities for the new CAD Headquarters Building.

Progressive achievement was made on the Satellite-based Communications, Navigation and Surveillance/Air Traffic Management (CNS/ATM) Systems Project to reap early operational benefits for enhanced ATC operational efficiency and flight safety. Trials and early implementation of new CNS/ATM system elements included Arrival Manager System, Electronic Flight Strip System, Automatic Dependent Surveillance-Broadcast (ADS-B), Flight Plan Conflict Advisory System etc.

The Division also carried on to actively implement new information technology applications and enhance the computer network and infrastructure to support departmental e-business development and e-government objectives. The IT Management Unit (ITMU) successfully achieved the ISO9001:2008 Quality Management System (QMS) certification in November 2010 on its operations.

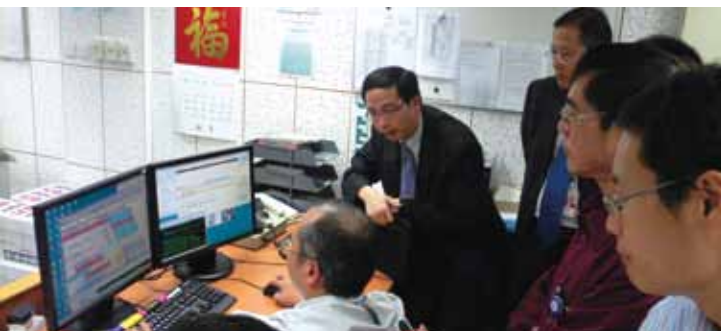
Replacement of Air Traffic Control System

To cope with the projected air traffic growth and expansion of aviation industry, and to maintain Hong Kong's position as a centre of international and regional aviation, funding approval was obtained in May 2007 to replace the existing ATC system with higher capacity and the latest functionalities so as to enhance efficiency in the provision of air traffic services in the Hong Kong Flight Information Region (FIR).

During the year, contracts for three major ATC systems were awarded covering the Communications Backbone System, Air Traffic Management System (ATMS) and Communications and Recording System (CRS). Tendering work for the remaining four major systems was in good progress, with contracts to be awarded before end 2011.

二零一一年二月，本處舉行了航空交通管理系統和通訊及記錄系統的工程項目啟動會議，而系統詳細設計的審核會於二零一一年四月展開。民航處航空站安裝通訊主幹系統設備的工程，亦於二零一一年三月展開。

The project kick-off meetings for ATMS and CRS were conducted in February 2011, with detailed design review of the systems to commence in April 2011. The installation of Communications Backbone equipment at the CAD outstations was commenced in March 2011.



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1. 本部職員參觀國泰航空公司的運作中心。
AESD staff visit the Operations Centre of Cathay Pacific Airways.
2. 二零一一年二月二十八日與航空交通管理系統承建商舉行工程項目啟動會議。
The Project Kick-off meeting with Contractor of Air Traffic Management System (ATMS) was held on February 28, 2011.

更換通訊、導航及監察系統

用於空管運作的現有通訊、導航及監察系統使用年期快將屆滿，本部正制訂更換策略。為維持安全可靠並具效率和成效的空管服務，更換策略會顧及飛機裝備的技術發展，以及衛星通訊、導航及監察系統的使用日增的情況。此外，本部將於二零一一年四月，聯同國際航空運輸協會，向該會會員進行問卷調查，以協助制訂更換系統的策略。

更新資訊及通訊科技系統

運作復原設施、自動用戶電腦數據備份設施及存儲區域網絡三份合約已於本年度批出。新設施投入運作前，會在二零一一至一二年度測試其加強資訊科技服務和保護數據的功能。採購民航處新總部大樓資訊及通訊科技設施的餘下招標工作，亦將於二零一一至一二年度分階段展開。

Replacement of Communications, Navigation and Surveillance Systems

As the existing Communications, Navigation and Surveillance (CNS) Systems for ATC are approaching the end of their usable lives, a replacement strategy is being developed which will take into account the technological advancement in aircraft equipage and increasing utilization of Satellite-based Communications, Navigation and Surveillance Systems in order to ensure the continued provision of safe, reliable, efficient and effective ATC service. In addition, the Division will conduct jointly with the International Air Transport Association (IATA) in April 2011 a survey to its members so as to help formulate the replacement strategy of the systems.

Updating of Information & Communication Technologies (ICT) Systems

Contracts for Disaster Recovery Facility, Automated User Computer Data Backup Facility and Storage Area Network (SAN) were awarded in the year. Testing of the new IT facilities for enhanced IT serviceability and data protection will commence in 2011-12 prior to putting into operational use. The remaining tenders for procurement of ICT equipment for the new CAD Headquarters Building will be rolled out in phases in 2011-12.

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持續發展安全管理系統以支援穩妥的 通訊、導航及監察和重要屋宇設施

為不斷發展和加強現有安全管理系統，本部自二零一零年六月起展開工作項目，消除本部安全程序與安全管理系統規管要求的差距，直至二零一一年三月底完成了95%的工作。優化安全管理系統文件的工作大部分完成，例如編製「航空交通工程及標準部安全趨勢研究程序」。本部亦投放大量資源推廣安全訊息，包括定期出版《航空交通工程安全忠告》期刊發放安全資訊，舉辦推廣安全工作坊，以提高員工的安全意識並交流所汲取的安全經驗。

為維持本部的安全管理系統並不斷改善其適用範疇，本部於二零一零年十一月設立「航空交通工程及標準部安全管理系統檢討會議」，以確保本部高層管理人員定期檢討系統各項事宜。年內，本部亦與航空交通管理標準組（本部的監管當局）和航空交通管理部（提供空中航行服務的對口）定期舉行會議和進行安全複檢工作，確保以具成效和高效率方式執行對通訊、導航及監察服務的安全管理。

Ongoing Development of the Safety Management System (SMS) in Support of Provision of Safe CNS and Critical Building Services

To continuously develop and enhance the existing SMS, the Division has by end March 2011 completed 95% of the work items commenced since June 2010 in bridging the gaps identified between the implemented safety processes and the SMS regulatory requirements. Whilst much of the work in terms of optimisation of SMS documentation was completed, such as the AESD Procedures for Safety Trend Study, substantial efforts were expanded in respect of safety promotion, which included amongst others the regular issuance of safety periodical "Air Traffic Engineering Safety Advisory" for dissemination of safety information, and the conduct of safety promotion workshops to raise staff safety awareness and share safety lessons learnt.

In order to sustain our SMS, as well as to aim at continuous improvement to the framework, the "AESD SMS Review Meeting" was established in November 2010 to ensure regular reviews of the SMS by senior management of the Division. During the report year, the Division maintained regular contacts with our regulatory authority – ATMSO, and ANSP counterpart – ATMD, through meetings and safety review activities so as to ensure effective and efficient SMS approach to safety management in the provision of CNS services.

本部舉辦「安全工作坊」以提高員工的安全意識，分享有關航空安全的經驗。

Safety promotion workshop was organised to raise staff safety awareness and share aviation safety lessons learnt.



衛星通訊、導航及監察/ 航空交通管理系統

為符合國際民航組織就衛星通訊、導航及監察/航空交通管理系統所訂的全球和地區實施計劃，本部繼續研究系統的最新發展，並詳細測試系統各個構件。有關係統的技術和運作測試均取得良好進展。為了早日發揮系統的功能，部分技術成熟的系統構件已投入服務，藉此提升和優化香港空管服務的水平。這些系統構件包括數據化自動航站情報服務、數據化遠航氣象情報服務、飛前放行指示數據鏈路服務、先進場面活動引導和控制系統、香港與曼谷和澳門之間的航空電訊網、與澳門的航空交通服務訊息處理系統，以及與三亞的空中交通服務設施間數據通訊。

飛前放行指示雙向數據鏈路服務

飛前放行指示數據鏈路服務自二零零八年起提供雙向傳輸，運作情況令人滿意。截至二零一一年三月底，服務使用率由70%逐步增至72%，使用服務的航空公司數目由44家增至58家。預計未來數年，會有更多航機使用這項服務，以提升空管人員與飛行員的通訊效率。

航空電訊網及航空交通服務訊息處理系統

香港作為航空電訊網及航空交通服務訊息處理中樞，配合國際民航組織亞太地區航空電訊網及航空交通服務訊息處理系統實施計劃，在二零零九年七月啟用高容效航空交通服務訊息處理系統。

SATELLITE-BASED COMMUNICATIONS, NAVIGATION AND SURVEILLANCE/AIR TRAFFIC MANAGEMENT (CNS/ATM) SYSTEMS

To comply with the Global and Regional Implementation Plans of the ICAO for the Satellite-based CNS/ATM systems, studies on the latest CNS/ATM development and detailed investigation on various elements of the CNS/ATM systems continued. Satisfactory progress was achieved on relevant technical and operational system trials. To reap the benefits of early CNS/ATM applications, some mature CNS/ATM system elements such as Digital-Automatic Terminal Information Service (D-ATIS), Digital-Meteorological Information for Aircraft in Flight (D-VOLMET) service, Pre-Departure Clearance (PDC) datalink service, Advanced Surface Movement Guidance and Control System (A-SMGCS), Aeronautical Telecommunication Network (ATN) connecting Hong Kong with Bangkok and Macao, ATS Message Handling System (AMHS) service with Macao, and Air Traffic Services Interfacility Data Communication (AIDC) with Sanya have been put into operational use which enhanced and upgraded the ATC services of Hong Kong.

Pre-Departure Clearance Two-way Datalink Service

The Pre-Departure Clearance (PDC) Datalink Service is in satisfactory two-way operation since 2008. The utilisation rate increased modestly from 70% to 72% and the number of participating airlines also increased from 44 to 58 as at end of March 2011. It is anticipated that more aircraft will use the service to grasp the benefit of efficient communications between ATC staff and pilots in the coming years.

Aeronautical Telecommunication Network and ATS Message Handling System

In accordance with ICAO Asia-Pacific Regional Aeronautical Telecommunication Network (ATN) and ATS Message Handling System (AMHS) Implementation Plan, with Hong Kong being an ATN and AMHS backbone site, a high capacity AMHS was commissioned in July 2009.

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與澳門進行的新系統相容測試和運作測試順利完成後，香港與澳門的航空交通服務訊息處理系統和航空電訊網在二零零九年十二月二十九日投入運作。港澳兩地是亞太區內首對城市使用航空電訊網，提供全面的航空訊息處理服務。本處現正安排在二零一一年和二零一二年，再分階段與北京、台北、東京、馬尼拉和其他鄰近地區的航空交通電訊中心進行測試。

先進場面活動引導和控制系統

先進場面活動引導和控制系統在二零零九年四月一日投入運作後，加強了對飛行區內飛機升降和車輛進出情況的監察。該系統設有衝突和「跑道入侵」警告功能，可提高機場的空管安全和效率。為了發揮系統的最大功能，本處與香港機場管理局商定，由二零一零年十二月三十日起，強制規定進入或越過現用跑道的車輛須安裝車輛應答機。此外，本處安裝了一套應答機自我測試設備，以助檢查應答機的操作狀況。為持續提升先進場面活動引導和控制系統的性能，本處正與系統供應商洽商採購一套附加維修支援增值服務的測試及評估系統。

After satisfactory completion of interoperability tests and operational trials of the new system with Macao, the new AMHS and ATN circuit between Hong Kong and Macao was put into operation on December 29, 2009, marking the first city-pair in the Asia and Pacific Regions that provides a full aeronautical message handling service over ATN. Further tests and trials with Beijing, Taipei, Tokyo, Manila and other adjacent ATS authorities are being arranged in 2011-2012.

Advanced Surface Movement Guidance and Control System

Since the operational use of the Advanced Surface Movement Guidance and Control System (A-SMGCS) on April 1, 2009, the system had provided enhanced surveillance of aircraft and vehicle movements on the airfield, with availability of conflict and runway incursion alerting functions for added air traffic control safety and efficiency in the airport. To achieve the maximum benefits of the system, CAD arranged with Airport Authority Hong Kong to implement mandate of vehicles entering or crossing active runways to be equipped with vehicle locators (Veelo) effective from December 30, 2010. A Veelo self-testing facility was installed by CAD to facilitate self-checking on operational status of the Veelo. As continuous enhancement in the performance of A-SMGCS, CAD is arranging with the equipment supplier to procure a test and evaluation system with enhanced maintenance support service.



電子工程師正在操作全球衛星定位系統數據監察系統。
An Electronics Engineer operates the Global Positioning System (GPS) Monitoring System.

廣播式自動相關監察

為準備在短期內實施廣播式自動相關監察，本處採購了一套廣播式自動相關監察顯示系統，以便監察和評估系統所接收到的訊號覆蓋範圍和位置的準確程度。現時，由西沙群島和香港國際機場現有的廣播式自動相關監察地面站發出的訊號，均會傳送至該顯示系統。此外，本處正安排在香港選定的地點設置多個廣播式自動相關監察地面站。為進行測試和評估，這些地面站所發出的訊號亦會傳送至廣播式自動相關監察顯示系統。另一方面，本處正與政府飛行服務隊安排，為飛行服務隊的直升機裝設廣播式自動相關監察機載設備，然後進行飛行測試，藉此評估廣播式自動相關監察訊號在本港低空範圍的覆蓋情況。

在國際民航組織廣播式自動相關監察東南亞地區工作小組第六次會議期間，本處倡議加強各飛行情報區之間在強制裝設廣播式自動相關監察機載設備和空管程序方面的協調合作，以便在二零一三年年底前，在新加坡與香港之間的M771和L642航路實施廣播式自動相關監察。

抵港航機排序系統

採購抵港航機排序系統，旨在提高準時抵港的航機數目，更善用空域，以及為管制人員提供自動化服務。系統通過運作評估和完成優化後，在二零零九年六月二十三日開始試行運作。由於試行運作結果令人滿意，系統在二零一零年七月一日啟用。系統功能在二零一零年十二月十日進一步提升，以便在惡劣天氣情況下編定最佳的抵港航機序列。這項功能預定在二零一一年年中啟用。

Automatic Dependent Surveillance – Broadcast

To prepare for planned implementation of Automatic Dependent Surveillance – Broadcast (ADS-B) in the near future, CAD procured an ADS-B Display System to facilitate monitoring and evaluation of coverage and position accuracy of ADS-B signals. ADS-B signals from Xisha Island and existing ADS-B ground stations within the Hong Kong International Airport (HKIA) are currently provided to the ADS-B Display System. Besides, ADS-B signals from ADS-B ground stations to be deployed in selected site in Hong Kong will also be input to the ADS-B Display System for trial and evaluation purpose. CAD is also arranging with the Government Flying Service (GFS) to equip ADS-B avionics in the GFS helicopter for conducting flight trials to assess ADS-B signal coverage at low level within the Hong Kong territories.

During the 6th meeting of the ADS-B Southeast Asia Work Group (ADS-B SEA WG), CAD initiated to strengthen collaboration among FIRs on harmonization of avionics mandate and ATC procedures for implementation of ADS-B by end 2013 along air traffic routes M771 and L642 between Singapore and Hong Kong.

Arrival Manager System

The Arrival Manager (AMAN) System was procured to help achieve more on-time arrivals, more efficient use of airspace and automated service to controllers. Following successful operational evaluation and system enhancement, the system was put into operational trial since June 23, 2009. With satisfactory trial results, the system was put into operational use on July 1, 2010. Further upgrade of the system to enable optimisation of aircraft arrival sequencing during adverse weather conditions was completed on December 10, 2010. The weather mode was planned for use in mid 2011.

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為國際民航組織新飛行計劃和航空交通服務訊息格式而設的前置處理器

國際民航組織有關飛行計劃和航空交通服務訊息格式的新規定將於二零一二年十一月十五日實施，本部現正進行所需的系統提升工作，以作配合。在整個系統在二零一三年年底完全更換前，本部會開發兩台前置處理器，把新飛行計劃和航空交通服務訊息格式轉換為現有格式，使現有的航空資料庫和飛行數據處理系統得以繼續處理這些數據。飛行數據處理系統的前置處理器合約已在二零一零年六月二十五日批出，而航空資料庫的合約則在七月十三日批出。系統交付和測試預定在二零一一年年底開始進行。

陸基增強系統

陸基增強系統能支援香港國際機場採用基於性能的導航，以應付全球對善用空域的需求。陸基增強系統提高全球衛星導航系統的準確程度，藉此優化其覆蓋範圍內飛機進場、著陸、起飛和地面運作等程序。為準備在香港國際機場進行陸基增強系統測試，本部會研究電離層對陸基增強系統性能的影響和系統選址事宜。為此，本部在二零一零年十二月二十四日採用監察系統，收集全球衛星導航系統數據作電離層研究用途，並預定在二零一一年年底前完成系統選址研究工作。

飛行計劃衝突提示系統

飛行計劃衝突提示系統的研發工作完成後，自二零一零年十一月起在航空交通管制中心進行系統運作測試。系統啟用後，當飛越香港空域的飛機可能出現中期(五至二十分鐘)衝突時，管制人員即可獲得提示，藉此加強空管運作安全。

Front End Processing Systems for New ICAO Flight Plan and Messages

In order to meet the new requirements on ICAO Flight Plan and ATS messages format by November 15, 2012, necessary system enhancements were being made. Prior to a complete system replacement by end 2013, two Front End Processors (FEP) are being developed to convert NEW Flight Plan and ATS Messages into the PRESENT formats so that the existing Aeronautical Information Database (AIDB) and Flight Data Processing (FDPS) systems can continue to handle these messages. Contracts were awarded on June 25, 2010 and July 13, 2010 respectively for FEP of FDPS and AIDB. Delivery and testing would commence in late 2011.

Ground Based Augmentation System

Ground Based Augmentation System (GBAS) will support the implementation of Performance Based Navigation (PBN) for addressing the global demands on efficient use of airspace capacity. It augments the accuracy of the Global Navigation Satellite System (GNSS) and so supports optimisation of procedures for approach, landing, departure, and surface operations within its area of coverage. To pave way for GBAS trials at the HKIA, a study of ionospheric effect on GBAS performance and the siting of GBAS will be conducted. To this end, a monitoring system was put into operational use on December 24, 2010 to collect GNSS data for ionospheric study. Completion of study on the siting of GBAS is planned for end 2011.

Flight Plan Conflict Advisory System

The development of the Flight Plan Conflict Advisory System (FiPCAS), which will help enhance safety to ATC operations by providing alerts to controllers when medium term (5 to 20 minutes) potential conflicts exist between aircraft flying over the Hong Kong airspace, has been completed and installed in the Air Traffic Control Centre for operational trial since November 2010.



同事於航空交通控制塔測試電子飛行進程單系統。

Electronic Flight Strip System is under trial in the Air Traffic Control Tower.

電子飛行進程單系統

為協助新空管中心及控制塔順利改以無紙方式運作，本部計劃讓香港國際機場控制塔人員使用電子飛行進程單試行系統。該試行系統已在二零一零年年底裝妥，現正進行驗收測試。控制塔人員會在二零一一年第三季開始接受相關培訓。

優化通訊、導航、監察及航空交通管理系統的維修安排

為加強空中航行服務，本部採用以風險為本的模式，改善通訊、導航、監察及航空交通管理系統的現行維修安排。本部檢視現行維修安排後，採用新的管理模式，分析現有及新設系統的設備狀況和性能，務求迅速回應系統維修要求，從而提升系統運作效率和服務水平。本部已制訂綜合計劃，就民航處現有的通訊、導航及監察／航空交通管理系統、電機及機械系統、屋宇設備和電子裝置制訂和實施積極的維修措施。

Electronic Flight Strip System

To facilitate a smooth transition to electronic flight strip environment in the new ATC Centre and tower, a trial Electronic Flight Strip System (EFSS) was planned for operational use by Tower Controllers at the HKIA. The installation of the trial EFSS was completed in late 2010, with acceptance testing in progress. Training of Tower Controllers has been scheduled to commence in Q3 2011.

Enhanced Maintenance on Communications, Navigation, Surveillance and Air Traffic Management Systems

With a view to strengthening the provision of air navigation services, the Division adopts a risk-based approach to enhance the existing maintenance practice on CNS/ATM systems. Current maintenance practices have been reviewed and new approach has been adopted to analyse equipment conditions and system performance of both existing and new CNS/ATM Systems with a view to providing faster response to the maintenance issues and hence enhancing operational efficiency and service availability. A comprehensive scheme was established to formulate and implement various proactive maintenance initiatives for the existing CAD CNS/ATM systems, electrical and mechanical systems, building services facilities and electronics installation.

航空交通工程及標準部 Air Traffic Engineering and Standards Division

先進協同決策

先進協同決策制度，通過實時交換本地和區內的航空運作情報，讓有關各方更能掌握實際情況，簡化工作流程，不論在運作、財政抑或環境方面，都能為航空業各方帶來巨大效益。為配合本港發展和推行先進協同決策，本處到訪歐洲多個主要國際航空樞紐實地考察，並為機場管理局、航空公司和地勤服務代理人等主要機場持份者的管理和運作人員，舉辦協同決策工作坊和研討會，以發布先進協同決策的新概念。本處正安排與業界進行技術及運作測試，讓先進協同決策制度為香港國際機場帶來效益。

航空交通管理標準組

航空交通管理標準組負責確保本港提供的空中航行服務達到並維持在所訂的最高安全水平。

安全監督工作

為持續監察航空安全，航空交通管理標準組在二零一零年對航空交通管理部和航空交通工程及標準部進行了兩次審查和35次安全檢查。審查範圍涵蓋服務提供者遵行安全管理系統規定的情況，重點核實安全風險管理的實施成效。對航空交通管理部進行的檢查範疇包括：航空交通管理工作的運作、程序、培訓和考試，安全管理系統的實施，空管設備/系統，安全事故調查，以及安全建議的跟進行動。經檢查的設施包括航空交通管制中心、控制塔、航空情報中心、備用航空交通管制中心和控制塔、培訓組、雷達模擬系統及控制塔模擬系統。此外，航空交通管理標準組定期監察各個空中航行服務範疇，例如通訊、導航及監察(包括航空通訊網中心)、航空氣象服務、搜索及救援服務、空中航行服務程序—航空器運行和航空情報服務(包括繪製航圖)。

Advanced Collaborative Decision Making

Advanced Collaborative Decision Making (Adv-CDM) is a system that will bring significant operational, financial and environmental benefits to all aviation stakeholders through improved situational awareness and streamlined workflows by real-time sharing of operational information in local and regional regime. To facilitate the development and implementation of Adv-CDM in Hong Kong, the Department conducted fact finding visits to major international hubs in Europe, and organised workshop and seminars for management and operation staff of major airport stakeholders such as Airport Authority, airlines, ground handling agents to promulgate the new concept. Technical and operation trials are being arranged to realise the potential benefits of Adv-CDM at HKIA.

AIR TRAFFIC MANAGEMENT STANDARDS OFFICE (ATMSO)

The ATMSO is responsible to ensure that a high standard of safety is set, achieved, and maintained in the provision of air navigation services (ANS) in Hong Kong.

Safety Oversight Activities

For ongoing safety regulatory surveillance, ATMSO conducted a total of 2 audits and 35 safety inspections on ATMD and AESD in 2010. The audits covered the regulatory compliance of the service provider's Safety Management System with focus on the effective implementation of safety risk management elements. The inspections on ATMD included ATM activities in operations, procedures, training, examinations, SMS implementation, ATC equipment/ systems, safety occurrences investigations, and safety recommendations follow-up actions. Facilities inspections took place in the Air Traffic Control Centre (ATCC), Control Tower, Aeronautical Information Centre, Backup ATCC & Tower, Training Unit, Radar Simulator and Aerodrome Simulator. Regulatory inspections on CNS (including the aeronautical network centre), Meteorological Service (MET), Search and Rescue (SAR), Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) and Aeronautical Information Services (AIS) (including aeronautical charting) domains of the ANS were also performed.



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1. 本部同事參加運用「Bowtie分析方法」進行安全風險管理的培訓班。
Training class on using Bowtie Methodology for Safety Risk Management.
2. 航空交通管理標準組為航空交通管理部人員舉辦空中航行服務安全監督工作坊，推廣安全意識。
ATMSO promotes safety awareness to ATMD staff through ANS Safety Oversight Workshop.

定期監察航空交通工程及標準部在開發安全管理系統方面的進展，並按情況提供意見和建議，是航空交通管理標準組在本年度內的重點工作。

航空交通管理標準組根據調查航空交通事故指引(《CAD 636》文件)的標準程序，聯同航空交通管理部的調查人員參與所有空管事故的初步調查，然後決定事故應交由航空交通管理部進行內部調查抑或按既定指引進行聯合調查。

所有安全事故的資料和數據，均會收集並儲存在事故報告資料庫系統內，以供進行安全趨勢研究。航空交通安全評核委員會每半年召開會議，檢討航空交通事故及其他安全事故。委員會成員包括飛行標準及適航部、航空交通管理標準組和航空交通管理部的代表，以及本地主要航空公司和政府飛行服務隊的航空安全代表。此外，航空交通管理標準組負責監察事故後相關調查報告所提出安全建議的執行情況。

為求有系統地加強安全監察措施，服務提供者必須訂立安全表現指標及條理分明的行動方案，以達到安全表現目標。

Regulatory oversight of the development of SMS in the AESD, providing advice and recommendations as appropriate, formed a key activity of ATMSO during the year.

As per standard procedures in the Guidance for Air Traffic Incident Investigation (CAD636), ATMSO participates in the preliminary investigations of all ATC incidents jointly with ATMD investigators. A decision will then be made as to whether an internal investigation will be conducted by ATMD or a Joint Investigation in accordance with established provisions is required.

Information and data on these safety occurrences are captured and stored in the Occurrence Report Database (ORDB) system for safety trend studies. Review on ATC incidents and other safety occurrences was conducted half-yearly in the Air Traffic Safety Assessment Committee (ATSAC), which comprised representatives from the Flight Standards and Airworthiness Division, ATMSO, ATMD, flight safety personnel of major local airline operators and the Government Flying Service. Furthermore, the ATMSO monitored the progress of post-incident follow-up actions on the recommendations put forward in the investigation reports.

To enhance safety monitoring measures with a systematic approach, the service provider was required to establish safety performance indicators together with structured action plans to achieve safety performance targets.

航空交通工程及標準部 Air Traffic Engineering and Standards Division

文件編製

航空交通管理標準組定期檢討和更新現有規管文件，確保內容準確、有效和符合現況。該組按需要發出《空中航行服務資料通告》，提醒空中航行服務提供者留意相關安全事項及簽發執照的規定。

空管主任執照

航空交通管理標準組的重要職責之一，是根據國際民航組織《附件1》的標準，規管空管主任執照簽發制度。年內，該組共處理17份空管主任執照申請、53份首次簽發及52份續發空管執照級別申請，以及32份首次簽發及100份續發合格證書申請。此外，該組亦按照《簽發航空人員執照 — 香港航空交通管制主任》(《CAD744》文件)處理1份首次簽發及4份續發空管認可考官證書申請，以及21份英語能力證書申請。航空交通管理部舉辦的各項空管培訓課程，均須接受規管審批。

安全推廣工作

為加強空中航行服務提供者的安全意識，航空交通管理標準組為航空交通工程及標準部人員舉辦三場簡介會，介紹處理審查及體系安全概念，又為航空交通管理部人員舉辦六場空中航行服務安全監督工作坊，以及為電子工程師和航空交通管制主任開辦兩個培訓班，介紹採用「Bowtie分析方法」(Bowtie Methodology)進行安全風險管理。此外，民航處內聯網亦定期發布規管資訊和安全管理資料，方便空中航行服務人員查閱。

Documentations

The ATMSO conducted regular reviews and updates on existing regulatory documents to ensure that they remain accurate, valid and up-to-date. Air Navigation Services Information Notices (ANSIN) were promulgated as required to draw the attention of the ANSP to relevant safety issues and licensing requirements.

ATC Personnel Licensing

One of the important functions of the ATMSO is to administer the air traffic controller licensing scheme in accordance with the standards stipulated in ICAO Annex 1. During the report period, the Office processed 17 applications for air traffic controller licences, 53 initial awards and 52 renewals of ATC ratings, 32 initial awards and 100 renewals of Certificates of Competency. An application for the initial award and four renewals of ATC Approved Examiner Certificates, as well as 21 applications for English Language Proficiency Certificates were also processed as per Personnel Licensing – Hong Kong Air Traffic Controllers (CAD744). All training courses conducted by ATMD for acquiring ATC ratings are subject to a regulatory approval process.

Safety Promotion Activities

To promote safety awareness within ANSP, the ATMSO conducted three presentations on managing audits and concepts of system safety to AESD staff, six workshops on ANS safety oversight to ATMD staff, two training classes on safety risk management using the Bowtie Methodology to electronics engineers and air traffic control officers. In addition, regulatory information and safety management materials were published regularly on an intranet website for convenient access by all ANS staff.



培訓及發展

培訓及發展事務辦公室

二零一零年十月四日，民航處成立培訓及發展事務辦公室，目的是加強民航處人員整體的關鍵才能，培訓本處人員掌握新技能，提倡持續學習的精神，從而提高工作表現和效率。培訓及發展事務辦公室的主要職責，是集中管理部門專業培訓事宜，以提升本處人員能力，並就事業發展和人力資源規劃，制定部門的培訓政策和方案。

培訓及發展事務委員會

培訓及發展事務辦公室成立後不久，培訓及發展事務委員會於二零一一年一月二十六日成立，擔當督導培訓及發展事務的職責。各分部代表於當日舉行首次會議，協定各項培訓方案及活動。

TRAINING AND DEVELOPMENT

Training and Development Office

With the objectives to strengthen the overall core competencies of CAD staff, to equip staff with new skills and to promote continuous learning among staff in order to enhance work performance and efficiency, the Training and Development Office (TDO) was set up in the Department since October 4, 2010. The main responsibilities tasked with TDO are the centralised management of professional training to enhance staff competence, and the formulation of departmental training policies and programmes for career development and human resources planning.

Training and Development Committee

Soon after the establishment of TDO, the Training and Development Committee (TDC) that takes a steering role on training and development matters, was formed on January 26, 2011. Divisional representatives convened the first committee meeting on the same day, to discuss and agree upon various training programmes and activities.



本部職員檢查太平山無線電站內的通訊系統。
AESD staff inspects communication systems in Victoria Peak Communication Station.



本部職員定期檢查柏架山航路監察雷達站的儀器。
AESD staff inspects equipment in Mount Parker RSR Station regularly.

航空交通工程及標準部 Air Traffic Engineering and Standards Division



培訓及發展事務委員會於二零一一年一月二十六日舉行首次會議。

First Meeting of Training and Development Committee on January 26, 2011.

培訓資料庫

為確保有效實施以能力為本的培訓計劃，民航處決定研發電腦程式，利用安全可靠的通用平台，管理部門培訓資料。新應用程式方便管理人員掌握同事的上課記錄，並因應航空業發展和培訓需要，規劃培訓方案。

Training Database

To ensure effective implementation of training programmes that take into account the competence-based approach, the department decided to develop a computer programme for administering the departmental training data on a secure common platform. The new application would support the management team to easily keep track of the attendance records and plan for staff training according to the industry growth and training needs.

資訊科技管理

資訊科技管理組有效實施新的資訊科技措施和落實數碼政府的目標，對各分部的日常業務流暢運作，持續發揮重要作用。年內，資訊科技管理組完成五項大型資訊科技計劃，以加強資訊科技服務和支援：

IT MANAGEMENT

The Information Technology Management Unit (ITMU) continued to play a very important role to support day-to-day business operations of various divisions, through effective implementation of new IT initiatives and e-government objectives. During the year, the ITMU completed five major IT projects for betterment of IT services and support:-

(一) 推行國際標準化組織ISO 9001: 2008品質管理體系，妥善編製文件、定期檢討和有效分配資源，為部門提供專業和符合業界標準的優質資訊科技服務。

(i) Implementation of Quality Management System ISO9001:2008 for providing the professional and industrial standard of quality IT services to the Department with proper documentation, periodical improvement review and effective resource allocation.

(二) 根據民航處新總部的資訊及通訊科技計劃，協助推行試驗運作復原設施、自動用戶電腦數據備份設施和存儲區域網絡數據存儲系統。

(ii) Assisted in the implementation of a pilot Disaster Recovery Facility, an Automatic User Computer Data Backup Facility and a SAN data storage system under the new CAD HQs ICT project.

- (三) 二零一零年十月，電腦蠕蟲“Stuxnet”對全球電腦系統造成破壞，資訊科技管理組因而重訂並實施更嚴格的保安設施及上報途徑，以便妥善處理資訊科技保安事故。
- (四) 提升黑莓(Blackberry)服務，例如實時接收立法會會議廣播，和縮短電郵傳遞時間。
- (五) 互聯網基礎設施採用傳統保安設計和設定，另加第二代應用防火牆，加強民航處網站的保安。
- (iii) In the light of the incidents caused by Major Computer Worm “Stuxnet” around the world in October 2010, ITMU has redefined and implemented enhanced IT security measurement and formalized the escalation channels for proper handling of any IT security incident.
- (iv) Implementation of enhanced Blackberry services, such as real-time broadcast of LegCo meeting and shortened email delivery time.
- (v) Implementation of Secured Website infrastructure using both traditional security design and settings, and the add-on 2nd generation application firewall for enhanced security protection to CAD websites



資訊科技管理組榮獲國際標準化組織ISO 9001:2008
品質管理體系證書頒發典禮。

IT Management Unit ISO 9001:2008 Certification
Presentation Ceremony.