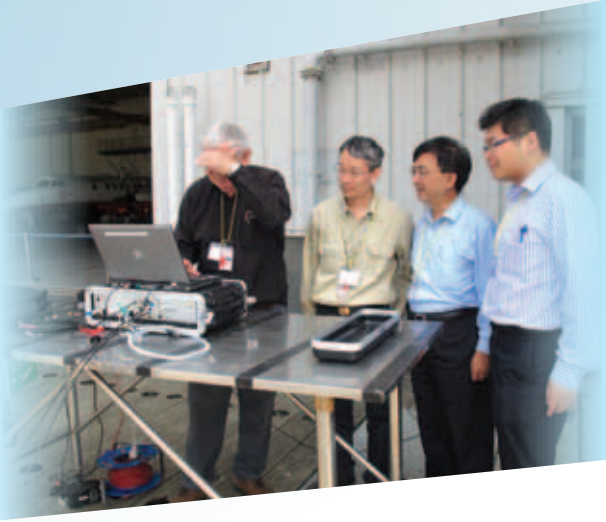
航空交通工程及標準
Air Traffic Engineering and Standards

航空交通工程及標準部負責設計、規劃、統籌和提供航空交通管制(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)，以及簽發航空交通管制員執照及相關級別。

The Air Traffic Engineering and Standards Division (AESD) is responsible for the design, planning, coordination, and provision of air traffic control (ATC) systems, radars, navigational aids, communication facilities, regulating Hong Kong air navigation services including conducting incident investigation, and issuing air traffic controller licences and the associated ATC ratings.



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航空交通工程及標準

年內，航空交通工程及標準部繼續全力維持高水準、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。民航處新總部的空管系統、資訊及通訊科技設施的採購工作已大致完成。新系統的安裝工作亦已展開，進展良好。

我們亦致力促進環保，提供由本部資訊科技管理組特別研發的電子工具，推動節約用紙。各項相關措施已略見成效。

更換空管系統

為應付航空交通的預期增長需求、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，把現有系統更換為配備最新功能兼且處理能力更高的空管系統，以提升香港飛行情報區的航空交通服務效率。

各主要空管系統及相關訓練設施的合約已全部批出。年內，本部與供應商審視了各主要系統的詳細設計，並於二零一二年一月開始在民航處新總部安裝新一代的空管系統。

Air Traffic Engineering and Standards

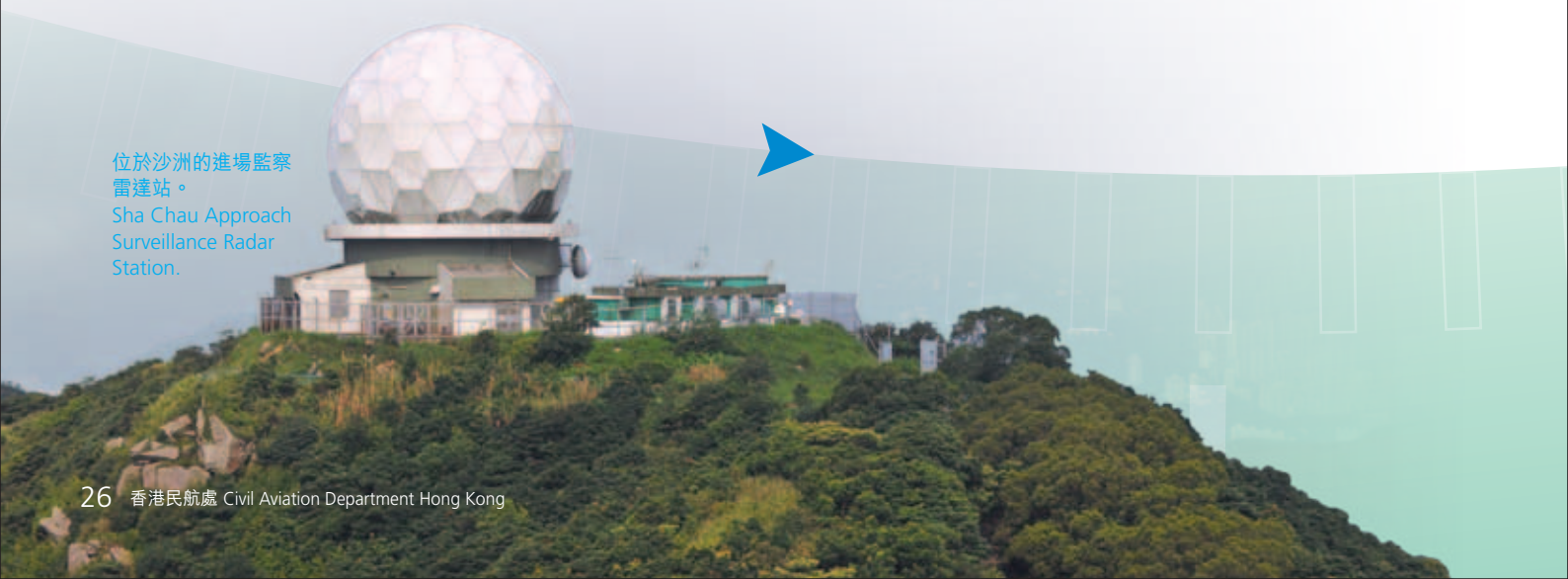
During the year, the Division continued its efforts in maintaining a high standard, stable, reliable and outstanding ATC system to support safe and efficient air traffic services. Procurement of the ATC systems, information and communication technology (ICT) facilities for the new CAD Headquarters were substantially completed and installation of new systems has commenced with satisfactory progress.

Initiatives for migration towards a greener office were implemented with encouraging initial results through the promotion of paper-saving work habits and customised electronic tools developed by the Division's Information Technology Management Unit (ITMU).

Replacement of ATC System

To cope with the projected air traffic growth and the expansion of the 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 HKFIR.

Contracts for all major ATC systems and related training facilities were awarded. During the year, the Division reviewed the detailed design of each major system with the contractor, and commenced the installation of the new generation of ATC system in the new CAD Headquarters starting from January 2012.



位於沙洲的進場監察雷達站。
Sha Chau Approach Surveillance Radar Station.

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，制訂策略時會顧及飛機裝備的技術發展，以及衞星通訊、導航及監察系統使用日增的情況。本部於二零一一年四月向國際航空運輸協會進行問卷調查，以取得各航空公司對更換策略的整體意見。根據調查結果，民航處制訂了一套更換策略，並於二零一一年八月舉行的區域專家小組會議中獲得國際航空運輸協會的支持。隨後，民航處領導的通訊、導航及監察/航空交通管理系統委員會，亦於同年九月認可該更換策略。本部現正進行全面的市場調查，以確立更換系統的時間表、時段和方法，以期盡量減少對航空交通運作的影響。

Replacement of Communications, Navigation and Surveillance Systems

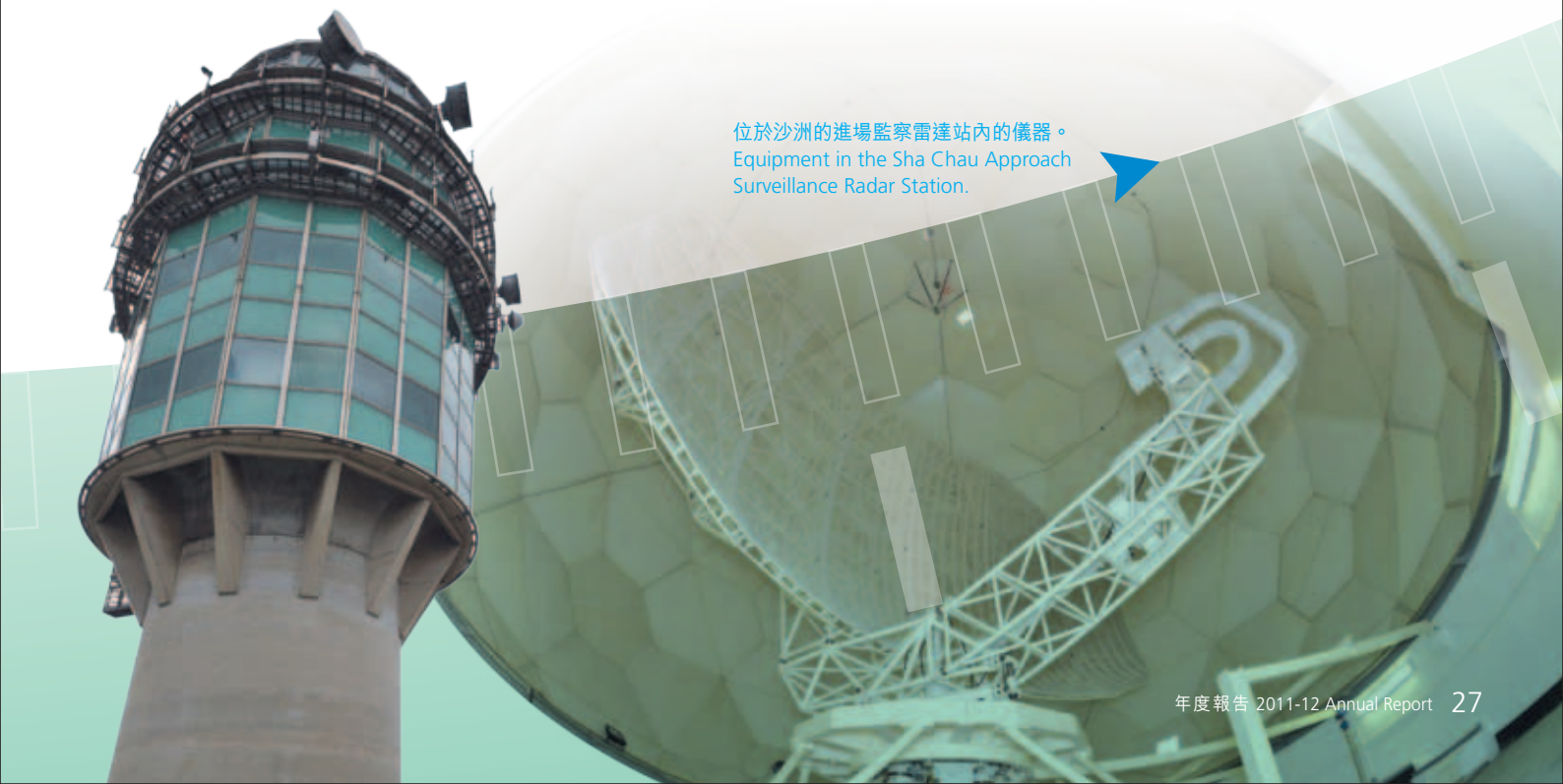
As the existing communications, navigation and surveillance (CNS) systems for ATC are approaching the end of their usable lives, a replacement strategy is being developed. It will take into account the technological advancement in aircraft equipage and increase the utilisation of satellite-based CNS systems in order to ensure the continued provision of safe, reliable, efficient and effective ATC service. The Division has conducted a survey with the International Air Transport Association (IATA) in April 2011 to seek airlines' collective view on the proposed replacement strategy. Based on the survey results, a replacement strategy was formulated and subsequently supported by the IATA at its Regional Group Meeting in August 2011, and similarly endorsed by the CAD CNS/Air Traffic Management Committee at its meeting in September 2011. A comprehensive market survey is in progress to firm up the timeframe, period and methodology on the CNS system replacement plan with a view to minimising disruption to ATC operations.

更新資訊及通訊科技系統

作為資訊科技業務持續運作計劃的一部分，本部已於年內如期完成應急伺服器、自動化用戶電腦數據備份和網絡儲存設施的測試工作。民航處新總部新的資訊及通訊科技設備的採購和測試工作亦進展順利，為本處各辦公室在二零一二年年底遷往新總部作好準備。

Updating ICT Systems

As part of the IT business continuity plan, the Division completed the testing of contingency servers, automated user computer data backup and network-based storage facilities during the year as scheduled. Procurement and testing of new ICT equipment for the new CAD Headquarters are also in smooth progress. These pave the way for relocating various offices of the CAD to its new headquarters in late 2012.



位於沙洲的進場監察雷達站內的儀器。
Equipment in the Sha Chau Approach Surveillance Radar Station.

持續發展安全管理系統，以支援穩妥的通訊、導航及監察設備和重要的屋宇設施

為不斷發展和加強現有的安全管理系統，本部自二零一零年六月起展開工作項目，找出並消除實際安全程序與安全管理系統規管要求之間的差距。所有工作已於二零一一年五月完成，當中包括就下述三個項目引入新程序並加以定期檢討：(一) 技術安全事故報告和調查；(二) 定期安全趨勢研究；以及 (三) 收發安全資訊電子平台的管理。

另外，由於設立新的航空交通管制中心 (空管中心) 和更換空管系統預計會涉及安全風險管理工作，為未雨綢繆，本部已加強檢討安全風險評估機制，並改善培訓工作。

《空中航行服務安全管理系統手冊》訂明關於外間服務供應商的政策。本部按照既定政策，確保外間服務供應商(包括維修服務)達到相關的安全標準。為此，本部已加強監察外間服務供應商實施和發展安全管理系統的情況。

年內，本部一直致力於推廣安全意識，採取的措施包括根據「專業人員培訓及技能保證計劃」，為員工提供安全管理系統方面的培訓。

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

To continuously develop and enhance the existing Safety Management System (SMS), the Division had, by May 2011, completed all work items commenced since June 2010 in bridging the gaps identified between the implemented safety processes and the SMS regulatory requirements. These included implementation and regular review of new procedures for (i) Technical Safety Occurrence reporting and investigation; (ii) periodic safety trend study; and (iii) administration and control of various electronic platforms for collection/dissemination of safety information.

In addition, in preparation for the expected safety risk management activities arising from the new Air Traffic Control Centre (ATCC)/ Replacement of ATC System Project, efforts were made in enhancing safety risk assessments review and training.

Policies on external services providers are stipulated in the Air Navigation Service SMS Manual. In this regard, the Division had strengthened its supervision of SMS built up by external services providers which also offer maintenance services.

Throughout the year, the Division had maintained its momentum in safety promotion. Initiatives included SMS training activities conducted as per our Professional Staff Training and Competency Assurance Schemes.

二零一二年一月九日，民航處人員於新空管中心出席新空管系統安裝工程的啟動儀式。
On January 9, 2012, staff members attended the launching ceremony for the installation of the new ATC system at the new Air Traffic Control Centre.

衞星通訊、導航及監察/航空交通管理系統

為符合國際民航組織就衞星通訊、導航及監察/航空交通管理系統所訂的「全球和地區性實施計劃」，本部已開發八個這類系統，進展良好：

(一) 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。截至二零一二年三月底，服務使用率由72%逐步增至76%，使用服務的航空公司則由58家增至66家。預計未來數年會有更多航機使用這項服務，空管人員與飛行員的通訊效率將得以提升。

(二) 航空電訊網及航空交通服務訊息處理系統

為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，香港與澳門之間的航空交通服務訊息處理系統和航空電訊網已在二零零九年十二月二十九日投入運作。在二零一二及二零一三年，本部會安排與北京和曼谷開展更多測試，亦會與東京、馬尼拉、台北和其他鄰近地區的航空交通電訊當局進行更多測試，以配合該等地區未來的設備更換計劃。

(三) 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，有效加強監察飛行區內航機和車輛移動的情況。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。民航處已經與系統供應商洽購一套測試及評估系統，以持續提升先進場面活動引導和控制系統的性能。預計該測試及評估系統於二零一二年四月完成安裝後，可以加強先進場面活動引導和控制系統的保養支援。

SATELLITE-BASED CNS/ATM SYSTEMS

To comply with the Global and Regional Implementation Plans of the ICAO for the satellite-based CNS/ATM (air traffic management) systems, the Division had made good progress on the development of eight CNS/ATM systems as highlighted below:-

(i) Pre-Departure Clearance Two-way Datalink Service

The Pre-Departure Clearance Datalink Service has been in satisfactory two-way operation since 2008. The utilisation rate increased modestly from 72% to 76% and the number of participating airlines also increased from 58 to 66 as at the end of March 2012. It is anticipated that more aircraft will use the service to grasp the benefit of efficient communication between ATC staff and pilots in the coming years.

(ii) Aeronautical Telecommunication Network and Air Traffic Service Message Handling System

In accordance with the ICAO Asia-Pacific Regional Aeronautical Telecommunication Network (ATN) and Air Traffic Service Message Handling System (AMHS) Implementation Plan, the new AMHS and ATN circuit between Hong Kong and Macao was put into operation on December 29, 2009. Further tests and trials with Beijing and Bangkok are being arranged in 2012-2013. More tests will be conducted with Tokyo, Manila, Taipei and other adjacent air traffic service authorities to match with their system replacement roadmaps in the coming years.

(iii) Advanced Surface Movement Guidance and Control System

Since the Advanced Surface Movement Guidance and Control System (A-SMGCS) had commenced operation on April 1, 2009, the system provided enhanced surveillance of aircraft and vehicle movements on the airfield, with conflict and runway incursion alerting functions available for added ATC safety and efficiency in the airport. As continuous efforts to enhance the performance of A-SMGCS, the CAD has arranged with the equipment supplier for provision of a test and an evaluation system. It is expected that the test and evaluation system will be installed in April 2012 to enhance the maintenance support service for A-SMGCS.

(四) 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，民航處選定香港的若干偏遠地點設置地面站，監察已裝設廣播式自動相關監察機載設備的飛機，並把訊號傳送至相應的顯示系統，以供測試和評估。為了解L642和M771航路的航機裝設廣播式自動相關監察機載設備的情況，民航處在二零一二年三月展開研究，分析在該兩條航路飛行的飛機所發出的數據。結果顯示大約79%的航機可發射清晰可用的相關訊號。另一方面，民航處在政府飛行服務隊的一架直升機設置了廣播式自動相關監察應答機，並進行飛行測試，評估監察訊號在本港低空範圍的覆蓋情況，結果同樣令人滿意。

(iv) Automatic Dependent Surveillance – Broadcast

To prepare for planned implementation of Automatic Dependent Surveillance-Broadcast (ADS-B) in the near future, the CAD has installed ground stations at selected remote sites in Hong Kong to detect ADS-B equipped aircraft and provide signals to the ADS-B display system for trial and evaluation purpose. To evaluate ADS-B equipage for aircraft along airways L642 and M771, the CAD initiated a study to analyse ADS-B data broadcast from aircraft flying along these two airways in March 2012. The result revealed that about 79% of aircraft could transmit ADS-B message with useable signal quality. The CAD also arranged with the Government Flying Service (GFS) to mount an ADS-B transponder on a GFS helicopter and performed flight trials to assess ADS-B signal coverage at low level within the Hong Kong territories. The results were satisfactory.

在亞太地區民航局局長第48次會議和廣播式自動相關監察系統東南亞及孟加拉灣分區工作小組第七次會議期間，民航處繼續大力推動，加強協調在亞太地區實施廣播式自動相關監察系統，並展開亞太地區實施計劃的草擬工作。

At the 48th Conference of Directors General of Civil Aviation and at the 7th ADS-B Southeast Asia/Bay of Bengal Work Group meetings, the CAD continued to drive for strengthening a harmonised ADS-B implementation and initiated development of a Regional ADS-B Implementation Plan for the Asia and Pacific regions.

在太平山上裝設的甚高頻通訊儀器。
Very High Frequency communication equipment installed on Victoria Peak.

(五) 抵港航機排序系統

本部採購抵港航機排序系統，以提升航班準時抵港率，善用空域，並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。系統功能其後在二零一一年九月及二零一二年三月獲得提升，以便在惡劣天氣下編訂最佳的抵港航機序列並改進系統操作效率。系統功能在二零一二年年中會進一步優化，以改善處理復飛航機序列。

(v) Arrival Manager System

The Arrival Manager (AMAN) System was procured to help achieve higher on-time arrival rate, 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. Upgrades of the system to enable optimisation of aircraft arrival sequencing during adverse weather conditions and to enhance system performance were completed in September 2011 and March 2012 respectively. Further upgrade of the system to improve the handling of missed approach flights is scheduled in mid-2012.

(六) 為國際民航組織新飛行計劃書和航空交通服務訊息格式而設的前置處理器

國際民航組織將於二零一二年十一月十五日就飛行計劃書和航空交通服務訊息格式實施新規定。因此，民航處已早於二零一一年十月完成為現有的航空資料庫和飛行數據處理系統開發並設置前置處理系統。本部依循國際民航組織所訂共分三期的實施計劃——內部測試已於二零一二年三月完成，與其他空中航行服務提供者安排的互相測試將會在二零一二年四月展開，並於二零一二年七月起，則會與空域使用者作進一步測試。

(vi) Front End Processing Systems for New ICAO Flight Plan and Messages

In order to meet the new requirements on the ICAO flight plan and air traffic service messages format by November 15, 2012, the in-house development of two front end processors for the existing Aeronautical Information Database (AIDB) and Flight Data Processing System (FDPS) was completed successfully in October 2011. The Division adhered to the ICAO three-phase implementation plan -- the internal testing was completed in March 2012, and testings with other air navigation service providers (ANSPs) will commence in April 2012. Further testing with airspace users will be arranged from July 2012 onwards.

民航處與政府飛行服務隊展開飛行試驗，以評估使用「廣播式自動相關監察」進行低空監察的覆蓋情況。
The CAD launched flight trials with the GFS to assess low-level surveillance coverage using ADS-B.

(七) 陸基增強系統

陸基增強系統能支援香港國際機場採用性能導航，以回應全球對善用空域的訴求。陸基增強系統提高全球衞星導航系統的準確程度，使在覆蓋範圍內飛機的進場、著陸、起飛和地面運作等程序更為精確。為準備在香港國際機場測試陸基增強系統，本部已於二零一一年年底完成系統選址的研究工作，並通過國際民航組織會議與周邊地區合作，開始共同研究位於亞太地區上空的電離層對陸基增強系統性能的影響。

(vii) Ground-Based Augmentation System

Ground-Based Augmentation System (GBAS) will support the implementation of Performance-Based Navigation for addressing global demands on efficient use of airspace capacity. It augments the accuracy of the Global Navigation Satellite System and supports optimisation of procedures for precision approach, landing, departure and surface operations within its area of coverage. To pave the way for GBAS trials at the HKIA, the Division completed a GBAS siting study in late 2011 and worked with neighbouring states through ICAO meetings to commence a study of ionospheric effect on the performance of GBAS in the Asia and Pacific regions.

(八) 電子飛行進程單系統

為協助新空管中心及航空交通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系統。年內已完成系統測試及控制塔人員的相關培訓，並將於二零一二年四月開始操作評估。

(viii) Electronic Flight Strip System

To facilitate a smooth transition to the electronic flight strip environment in the new ATCC and the Air Traffic Control Tower, an electronic flight strip system (EFSS) was planned for operational use by tower controllers at the HKIA. Testing for the EFSS and training of tower controllers were completed during the year. Operational evaluation of the EFSS will commence in April 2012.

優化通訊、導航及監察和航空交通管理系統的維修安排

為加強空中航行服務，本部採用風險為本模式，改善通訊、導航及監察/航空交通管理系統的現行維修安排。本部聯同維修服務供應商檢視現行維修安排，逐步採用新的管理模式，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質素。本部年內制訂綜合維修計劃及維修措施，涵蓋現有的通訊、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。這些維修計劃及措施已按時實施和完成。

Enhanced Maintenance on CNS and ATM 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 were reviewed with maintenance service providers. A new approach is progressively adopted to analyse equipment conditions and system performance of both existing and new CNS/ATM systems for providing faster response to maintenance issues, hence enhancing operational efficiency and service quality. Comprehensive maintenance schemes and maintenance initiatives for the existing CNS/ATM systems, electrical and mechanical systems, building services facilities and electronics installation were satisfactorily implemented and completed within this year.

先進協同決策

香港國際機場以至珠江三角洲各個機場，均已認同先進協同決策制度有助改善航機進場及周轉程序，從而提升機場持份者的運作效率。為配合本港發展和推行先進協同決策制度，本處主導開發試行系統，並在二零一一年十二月底完成初步驗收。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。

Advanced Collaborative Decision Making

Advanced collaborative decision making (Adv-CDM) is recognised as one of the strategic drivers in the HKIA as well as airports in the Pearl River Delta region to enhance flight arrival and turnaround processes and hence operational efficiency of various airport stakeholders. To facilitate the development and implementation of Adv-CDM in Hong Kong, the Department took the lead in the development of the Adv-CDM Trial Platform which was commissioned in late December 2011. Technical and operation trials are being arranged to realise the potential benefits of Adv-CDM at the HKIA.

民航處與機電工程署簽訂新服務水平協議，委託該署為本處新總部的機電和屋宇裝備系統，提供營運和保養服務。
The CAD signed a new Service Level Agreement with the Electrical and Mechanical Services Department (EMSD) to commission the EMSD to provide operations and maintenance services on electrical and mechanical and building services systems for the new CAD Headquarters.

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年內為航空交通管理部與航空交通工程及標準部進行了兩次審計及32次安全檢查。審計內容包括查核服務提供者有否遵守安全管理系統的規管要求，重點是審查安全政策/目標與安全促進元素的實施成效。檢查範圍包括航空交通管理的運作、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。檢查人員亦檢查了多個設施和工作單位，包括空管中心、控制塔、航空情報中心、備用空管中心和控制塔、培訓組、雷達模擬系統及控制塔模擬系統。此外，又檢查了空中航行服務的其他領域，例如通訊、導航及監察（包括航空網絡中心）、航空氣象服務、搜索和救援服務、空中航行服務程序—航空器運行和航空資訊服務（包括繪製航圖）。

年內，航空交通管理標準組的一項重點工作，是監管航空交通工程及標準部開展安全管理系統的進程，為這套系統的監管認可做好準備。

航空交通管理標準組的職責之一，是聯同航空交通管理部的調查人員，就所有空管事故進行初步調查，然後再按既定指引，確定調查的形式。

航空交通安全評核委員會每半年召開會議，檢討空管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。航空交通管理標準組繼續負責監察事故後調查報告所提出的安全建議，跟進執行進展和成效。

AIR TRAFFIC MANAGEMENT STANDARDS OFFICE (ATMSO)

The ATMSO is responsible for ensuring that a high standard of safety is set, achieved and maintained in the provision of air navigation services in Hong Kong.

Safety Oversight Activities

For ongoing safety regulatory surveillance, ATMSO conducted two audits and 32 safety inspections on the Air Traffic Management Division (ATMD) and AESD in 2011-12. The audits covered the regulatory compliance of the service providers' SMS with a focus on the effective implementation of safety policy/objectives and safety promotion elements. The inspections included ATM activities in operations, procedures, training, examinations, SMS implementation, ATC equipment/systems, safety occurrences investigations, and follow-up actions arising from safety recommendations. Facilities visited by the inspectors included the ATCC, the Control Tower, Aeronautical Information Centre, Backup ATCC and Backup Tower, Training Unit, radar simulator and aerodrome simulator. Inspections on CNS (including the Aeronautical Network Centre), meteorological information, search and rescue, Procedures for Air Navigation Services – Aircraft Operations and Aeronautical Information Services (including aeronautical charting) domains of air navigation services were also conducted.

Oversight of the development of SMS in AESD was a key activity of ATMSO during the year in connection with the preparatory work for the regulatory acceptance of AESD SMS.

As part of its duties, ATMSO participated in the preliminary investigations of all ATC incidents jointly with ATMD investigators. A decision would then be made as to the form of investigation to be conducted in accordance with established provisions.

Review on ATC incidents and other safety occurrences was conducted half-yearly in the Air Traffic Safety Assessment Committee, which comprised representatives from the Flight Standards and Airworthiness Division, ATMSO, ATMD, flight safety personnel of major local airline operators and the GFS. ATMSO continued to monitor the progress and effectiveness of post-incident follow-up actions on the recommendations put forward in the investigation reports.

為客觀和有系統地加強安全監察措施，空中航行服務提供者必須訂立安全表現指標和完善的實行計劃，以達到航空交通管理標準組所認可的安全表現目標。

To enhance safety monitoring measures with a systematic and objective-based approach, the ANSP was required to establish safety performance indicators together with structured action plans to achieve safety performance targets as agreed by the ATMSO.

文件編製

Documentations

航空交通管理標準組定期覆檢和更新現有規管文件，確保內容準確、有效和符合現況。年內共發出五份有關安全事項和空中交通管制執照規定要求的《空中導航服務資訊公告》。

The ATMSO conducted regular reviews and updates on existing regulatory documents to ensure that they remain accurate, valid and up-to-date. Five Air Navigation Services Information Notices were promulgated in this year on relevant safety issues and ATC licensing requirements.

空管主任執照

ATC Personnel Licensing

航空交通管理標準組的一項重要職責是根據國際民航組織附件1的標準，執行空管主任執照簽發制度。年內，該組共處理20宗空管主任執照申請、29宗首次簽發及13宗續發空管執照級別申請，以及40宗首次簽發及181宗續發合格證書申請。此外，又處理了七宗首次簽發及一宗續發空管認可考官證書申請，以及20宗英語能力證書申請。

One of the important functions of ATMSO is to administer the ATC licensing scheme in accordance with the standards in ICAO Annex 1. During the report period, the Office processed 20 applications for ATC licences, 29 initial awards and 13 renewals of ATC ratings, 40 initial awards and 181 renewals of Certificates of Competency. Seven applications for the initial award and one renewal of ATC Approved Examiner Certificates, as well as 20 applications for English Language Proficiency Certificates were also processed.

在簽發空管主任執照方面，航空交通管理標準組為航空交通管理部的高級空管主任舉行認可考官培訓課程。五名一級/二級空管主任在合資格考官的督導下，完成培訓課程及所需的考試，於二零一一年考獲空管認可考官證書。

In connection with personnel licensing requirements, ATMSO conducted an Approved Examiner Training Course for senior Air Traffic Control Officers (ATCOs) of ATMD. Upon completion of the training course and after conducting the required number of examinations under the supervision of qualified examiners, five ATCO I/II successfully acquired their Approved Examiner Certificates in 2011.

根據國際民航組織和《1995年飛航（香港）令》的規定，航空交通管理部獲批准成為認可的航空交通管理培訓組織，可為空中交通管制員提供培訓。航空交通管理部舉辦的空管培訓課程，必須依據國際民航組織附件1的規定開辦，並須接受航空交通管理標準組監管。

In accordance with the ICAO's and Air Navigation (Hong Kong) Order 1995's requirements, approval was given to ATMD as an approved training organisation for conducting training for air traffic controllers. ATC training conducted by ATMD shall be run pursuant to stipulations in ICAO Annex 1 and subject to regulatory oversight of ATMSO.

安全推廣工作

Safety Promotion Activities

為進一步推廣安全監督和安全管理概念，航空交通管理標準組於二零一一年五月至八月期間，舉辦為期六日的空中導航服務安全規例課程，學員來自民航處多個分部。

For wider promulgation of safety oversight and safety management concepts, ATMSO conducted a six-day course on Safety Regulation of Air Navigation Services during May to August 2011 with participants from various CAD divisions.

航空交通管理標準組與本處轄下的香港民航訓練中心攜手合作，為本地和區內的航空機構籌辦規管航空交通管理和安全監督的培訓課程。本課程將視乎航空業界的反應，在適當的時機推出。

此外，航空交通管理標準組亦定期於本處內聯網發布規管資訊及安全管理資料，方便空中航行服務人員查閱。

In association with the CAD's Civil Aviation Training Centre, ATMSO had also prepared an ATM Regulatory and Safety Oversight Training Course for the local and regional aviation communities. The course would be presented depending on the availability of training slot and general response of the aviation communities.

In addition, regulatory information and safety management materials were published regularly on the intranet for convenient access by all air navigation services staff.

精確著陸導向設備提供準確的方向指示及下降指引訊號，協助航機安全降落。
Precision landing aid provides accurate azimuth and descent guidance signals to facilitate safe landing of aircraft.

下滑道天線提供準確的下降指引訊號，引導航機降落。
The Glide Path antenna provides precise descent guidance signals for safe landing of aircraft.

培訓及發展

培訓及發展事務辦公室

民航處成立培訓及發展事務辦公室，目的是強化整體的培訓機制，按照部門既定的培訓政策和方案，編寫《培訓及發展事務手冊》，闡明培訓藍圖的細節。該辦公室因應各分部人員的特定職務要求，制訂以能力為本的培訓項目。此外，該辦公室更致力開發不同的進修途徑，推動自學文化，鼓勵本處人員自我增值。

TRAINING AND DEVELOPMENT

Training and Development Office

The Training and Development Office (TDO) was set up for strengthening the entire training mechanism in the Department. With the Training and Development Exposition, details for every bit of the training mind map, in line with departmental training policies and programmes so established, are prescribed. Competency-based training needs are arranged for officers working in various divisions that carry out specific duties. In addition, various channels are being developed to promote self-learning culture for officers to better equip themselves.

培訓資料庫

新研發的電腦程式在二零一二年年初建立，利用安全可靠的通用平台，管理部門培訓資料。新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。為使新程式得以在航空交通工程及標準部順利試行，培訓及發展事務辦公室先在二零一一年五月依據本部各專業同事的關鍵才能，與各組代表一同制訂初步所需的培訓項目。

Training Database

A new computer application for administering departmental training data on a secure common platform was set up in early 2012 to support the management team to easily keep track of attendance records and plans for staff training according to industry growth and training needs. To pave the way for the pilot trial run in the Division, an initial set of training needs was developed jointly with representatives from respective sections in May 2011 for every AESD professional staff according to their core competencies.

下一代航空專業人員計劃

為確保有足夠合資格的專業人員操作、管理和維修未來的國際航空運輸系統，國際民航組織轄下的「下一代航空專業人員計劃」工作組推出一連串相應措施，其中一項是規範涉及操作、維修和安裝通訊、導航及監察/航空交通管理系統的技術人員所需的培訓和能力。這個以能力為本的新培訓模式，包括基本培訓、資格培訓、系統/設備等級訓練、持續培訓和發展培訓五個程度。隨着培訓指南於二零一一年年初正式出版，培訓及發展事務辦公室即與相關持份者緊密合作，務求為負責維修通訊、導航及監察/航空交通管理系統的技術人員，重整現時所接受的培訓。深入分析現時的訓練做法與新模式的差距後，培訓及發展事務辦公室成立了專責小組，以便在二零一三年年底或之前彌補不足之處。

New Generation Aviation Professionals (NGAP) Initiatives

To ensure that there will be a sufficient number of qualified and competent professionals available for the operation, management and maintenance of the future air transport system, the ICAO Next Generation Aviation Professionals Task Force launched a series of corresponding initiatives, one of which was to standardise the training and competencies of technical personnel involved in the operation, maintenance and installation of the CNS/ATM system. The progression of the new competency-based training model consists of five levels, namely Basic Training, Qualification Training, System/Equipment Rating Training, Continuation Training and Development Training. With the training manual formally published in early 2011, the TDO had been working closely with relevant stakeholders to revamp the existing training of the technical personnel maintaining our CNS/ATM system. After conducting a thorough gap analysis of the existing training practice against the new model, a special team was then formed to address the deficiencies identified by the end of 2013.

新入職人員的啟導課程

為了使新同事熟習民航處的運作，培訓及發展事務辦公室為本處的新入職專業職系人員舉辦度身訂造的啟導課程。年內，承各方通力合作，兩輪啟導課程順利完成，當中共有11位新同事參加。在為期三日的課程中，新同事不但可以了解本處各個分部的具體職能，亦可藉此機會認識其他辦公室的同事。參加者反應熱烈，認為課程達到他們的期望。在採納各方面的意見後，培訓及發展事務辦公室會相應改善啟導課程，以便日後繼續舉辦，讓專業職系所有新入職人員參加。

Orientation Programmes for New Recruits

To facilitate the new recruits to familiarise themselves with departmental operations in a more systematic manner, the TDO has tailor-made a structural orientation programme for professional grade officers joining the Department. Through concerted efforts, two rounds of orientation programme were smoothly conducted during the year for a total of 11 new colleagues. From the three-day programme, the participants not only appreciated specific functions of each CAD division, but were also offered an opportunity to cultivate a network with colleagues working in other CAD offices. With positive and encouraging feedback from the participants, the orientation programme would be fine-tuned and offered to all new professional grade officers.

培訓及發展事務辦公室為本處相關人員舉辦採購和承包商管理課程。
The TDO organised a Procurement and Contractor Management course for officers who will handle such procedures.

資訊科技管理

「電子政府」的數碼策略致力發展資訊及通訊科技，建設香港為國際數碼城市。藉妥善實施此策略及各項新的資訊及通訊科技措施，資訊科技管理組繼續擔當重任，支援各分部的日常運作。年內，資訊科技管理組完成五項大型資訊科技計劃，以加強服務和支援：

(一) 為配合無紙化和「電子政府」的環保發展目標，推行多項資訊科技應用系統和內部應用程式，減少對手寫筆記、報告和各種紙質文件的需求，估計減幅每年多達五萬頁。

(二) 「電子訊息顯示系統」項目的開發和實施。公眾可以使用民航處新總部的多重觸控顯示器和登上互聯網，獲得最新的航空消息及本處資訊。「電子訊息顯示系統」亦可以提高公眾對航空知識、科技、教育及發展等方面的興趣。預計系統將於二零一三年年初推出。

(三) 擴充電子考試系統。為配合香港經濟發展所帶動的航空交通增長，系統容量會提高以應付機組人員和維修人員考試的需求。擴充計劃將於二零一三年年初完成。

(四) 改善民航處網站，為公眾提供無障礙的網頁服務。殘疾人士，包括視障、肢體殘障、聽障和有認知障礙的人士，將更容易使用本處網站。民航處新網站將於二零一三年年初啟用。

(五) 二零一二年年初，民航處總部內新設的十千兆資訊及通訊科技網絡與現有的民航處網絡完成整合。至於其他的資訊及通訊科技基礎設施的安裝工作，目前正在陸續進行。

IT MANAGEMENT

The ITMU continued to play a very important role to support day-to-day operations of various divisions through effective implementation of new IT initiatives and e-Government strategy on the development of ICT for building on Hong Kong's position as a world digital city. During the year, there were five major IT projects in various stages of completion for the betterment of IT services and support:

(i) Implementation of various IT applications and in-house application for paperless initiative and alignment with e-Government objective for Green initiative – it is estimated that the demand for hand-written notes, reports and various paper document can be reduced by 50 000 pages per year through the project.

(ii) System development and implementation of the Electronic Information Display System (e-IDS) – e-IDS is a system designed to provide up-to-date aviation news and the CAD's information to the general public via multi-touch displays at the new CAD Headquarters and on the Internet. It also aims at arousing public interest in aviation knowledge, technology, education and development etc. The system is planned for commission in early 2013.

(iii) Expansion of the electronic examination system – the system will provide more capacity for flight crew and maintenance crew examinations to cope with the growth of air traffic derived from Hong Kong's economic development. The expansion is planned to be completed by early 2013.

(iv) Enhancement of the CAD's website – it will provide better accessibility for the general public with disabilities, including visual, physical, hearing and cognitive impairment. The new CAD website is planned to be implemented by early 2013.

(v) Integration of a new ten-gigabit ICT network at the new CAD Headquarters with the existing CADNET was completed in early 2012. Other ICT infrastructure installation projects are on-going.