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## 交通部民用航空局飛航服務總臺 函

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學運輸科技與物流管理學系、中華科技大學航空服務管理系、國防部空軍司令部、國防部海軍司令部、國防部陸軍司令部、空軍作戰指揮部、中山科學研究院、海洋委員會海巡署、內政部空中勤務總隊、空軍松山基地指揮部、空軍氣象聯隊、飛航管制聯合協調中心、審計部交通建設審計處、經濟部航空產業發展推動小組、國家圖書館、立法院國會圖書館、國立臺灣圖書館、臺北市立圖書館、國立臺灣大學圖書館、國立交通大學圖書館、國立公共資訊圖書館、臺南市立圖書館、國立東華大學圖書館資訊中心、五南文化廣場、國家書店物流中心

副本：

總臺長黃麗君





# 飛航服務總臺107年年報

AIR NAVIGATION & WEATHER SERVICES 2018 ANNUAL REPORT



交通部民用航空局  
飛航服務總臺

AIR NAVIGATION & WEATHER SERVICES, CAA, MOTC

交通部民用航空局飛航服務總臺 107 年年報

AIR NAVIGATION & WEATHER SERVICES 2018 ANNUAL REPORT

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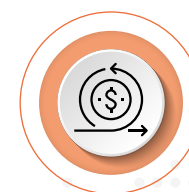
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# 總臺長的話

Words from the Director



展翼天際，締結一流飛航

Spreading wings for first class air traffic services

01

回顧 107 年，在交通部、民航局、軍方、桃園國際機場公司、各航空站、民航業者等各方協助及總臺全體同仁努力下，臺北飛航情報區航機總管制架次達 175.6 萬、桃園國際機場起降架次達 25.7 萬、總臺盈餘逾 18.7 億元，均創下新高紀錄，繳出亮眼的成績單！另外，航空運輸日益熱絡，為因應航行量的快速成長，總臺在提升區域協同合作、深化飛航安全管理、優化飛航服務品質、完善行政管理及為民服務各個面向也持續進步、大有斬獲。

為促進東北亞地區航行的效率，在提升區域協同合作上，協調日、韓二國航管單位啓用 L4 新航路、與福岡飛航情報區開啓雷達自動交接管功能，有效紓解長年航情壅塞情形；另為掌握國際民航發展趨勢，積極參與民用飛航服務組織（Civil Air Navigation Services Organisation, CANSO）與非正式東亞飛航管理協調小組（the East Asia Air Traffic Management Coordination Group, EATMCG）等國際會議，汲取國際民航服務新資訊並分享臺北飛航情報區相關作業經驗。

飛安一向是總臺作業最高指導原則，今年我們仍持續推動深化飛航安全管理，除辦理風險案例分享、強化安全行動小組執行力及改變管理作業、各類飛航服務人員查核及督查等事項外，另廣續監控各項關鍵績效指標、蒐集安全數據，作為風險趨勢分析與管理之基礎，並關注航管席位的變化，適時評估調整人力的需求，以滿足快速增長之航情。

在優化飛航服務品質上，我們新增「航空情報服務網」多項功能、啓用新的「航空氣象收發報系統」、增設「航空氣象服務網」直昇機專區…等提供使用者更便捷的資訊服務；另外完成「飛航訊息處理系統」、「航管備援系統」、「助航設備服務費收費系統」等作業系統之汰新升級、新建「航管席位輔助資訊顯示系統」，整合更即時更安全的服務資訊。在助導航服務上，啓用了新金門終端航管雷達、升級汰換高雄 27 跑道及嘉義機場 18 跑道 ILS 等儀降設備、新增強化豐年、花蓮、松山等機場燈光設施，大大提升航機操作安全。

去年我們獲得 107 年國家關鍵基礎設施防護訪評演習「特優」的殊榮及民航局所屬機關行政績效第 1 名、為民服務績效定期評鑑第 1 名及公文績效檢核評鑑第 3 名的佳績；另推出「天際守護者 - 飛航管制」主題策展網站，獲得民衆大幅迴響…，這些都鼓舞總臺同仁在完善行政管理及為民服務方面更要精益求精。

目前為因應桃園國際機場三航廈的建設與機場航情、資訊整合的需求，廣續推動「臺灣桃園國際機場塔臺暨整體園區新建工程」，新塔臺除建置一套符合國際高運量機場所需之塔臺自動化系統外亦建置 360 度塔臺模擬機系統，用以強化塔臺管制員之訓練及緊急應變的能力，預計 108 年底將達成新舊塔臺作業轉移之目標。

未來，在面對世界各區航情持續攀升及龐大飛航資訊須快速整合與分享的環境下，航情管理難度及協調介面複雜度已今非昔比，面對這嚴峻的挑戰，我們將繼續秉持用心、貼心、創新精神，加強與各區民航相關單位之溝通，致力於專業人力培育，並依循國際民航組織全球空中航行計畫（Global Air Navigation Plan, GANP）所揭櫫之飛航系統組塊升級（Aviation System Block Upgrades, ASBU），積極導入相關協同合作、資訊共享機制，納入新科技與技術，提升飛航服務各項相關軟、硬體設備及人員作業水準，俾與國際接軌，繼續朝臺北飛航情報區安全、效率、品質、永續的目標邁進！

交通部民用航空局飛航服務總臺 總臺長

黃麗君

Looking back on 2018, with the support from MOTC, CAA, the Armed Forces, Taoyuan International Airport Corporation, airports, and civil aviation operators, together with the effort from all of our colleagues at ANWS, we have achieved record breaking figures, with providing services to a total number of 1.756 million controlled flights in the Taipei Flight Information Region (FIR), a number of over 257 thousand movements in Taoyuan International Airport, and a surplus reaching over 1.87 billion NTD, our accomplishments are truly impressive! On the other hand, with the aviation transportation industry being increasingly busy, ANWS, in response to the rapid growth in air traffic volume, has been continuously improving and gaining major achievements in terms of developing regional cooperation, deepening its air traffic safety management, improving air traffic service quality, perfecting its administration management, and providing services to the public.

In order to enhance efficiency of air traffic flow of the North-eastern Asia region, the ANWS has been establishing regional cooperation by coordinating with ATC units of Japan and South Korea regarding the launch of new route L4, and launching Automatic Radar Handoff Function together with Fukuoka FIR, contributing to relieving the long-lasting air traffic congestion. With the purpose of understanding international civil aviation developmental trend in mind, the ANWS has also been proactive in participating international meetings of organizations, including Civil Air Navigation Services Organisation (CANSO) and the East Asia Air Traffic Management Coordination Group (EATMCG), to learn about new information of international civil aviation services and share operational experiences of the Taipei FIR.

Aviation safety has always been the highest priority of the operation of ANWS. With Air traffic safety management system continued to be deepened this year, not only have we held "2017 Safety Risk Case Study Seminar", improved execution capability of our Safety Action Group(SAG) and process of Change Management, evaluation and supervision on air traffic safety personnel, we have also been monitoring key performance indicators and collecting safety data as basis for risk trend analysis and management. Furthermore, in response to future increasing trend of flight volume, we will carry out long-term ATC human resource demand assessment, as well as analyze changes on positions and required human resources.

On the front of improving air traffic service quality, we have enabled new functions on the "Aeronautical E-Services, AES", launched a new "Aviation Weather Report Transmitting and Receiving System", launched a new helicopter area on the "Aeronautical Meteorological Service Page", etc. to provide users with more convenient information services. We have also completed replacement and upgrades of operation systems including "ATS Message Handling System (AMHS)", "Extended Backup ATC System (EBAS)", and "Navigation Aids Facilities Charges Collection System", and have newly established the "Supplementary Information System" to integrate service with higher level of immediacy and safety. And on the front of navigational services, we have launched the Kinmen Airport terminal air traffic control radar, replaced and upgraded instrument landing equipments such as ILS

of Kaohsiung International Airport's runway 27 and Chiayi Airport's runway 18, installed and strengthened lighting equipments of Fongnian Airport, Hualien Airport, and Songshan Airport, resulting in enhanced flight safety.

We have been graded with "Excellent" in the National Critical Infrastructure Protection Drill, and have been awarded with first place in the CAA Annual Performance Evaluation of Agencies, first place in Regular Evaluation of Service Performance, and third place in Evaluation of Document Performance. Moreover, the launch of the themed exhibition "Guardian of the Sky: Air Traffic Control" curation has generated great responses from the public. These achievements have been an encouraging force for our colleagues at ANWS to perfect administration management and to keep improving services provided to the public.

In response to the construction of Taoyuan International Airport Terminal 3 and its air traffic condition, as well as demand for information integration, we have been carrying out the "Taiwan Taoyuan International Airport New Air Traffic Control Tower Complex Construction Project", with an ATC tower automation system which meets demand of an international airport with high traffic volume, as well as a 360 degree ATC tower stimulation system, which can provide air traffic controllers with further training and emergency response skills. It is estimated that the new system transfer will be completed by the end of 2019.

In the future, with a continuous rise of air traffic volume across the globe and a condition where a huge amount of air traffic information has to be integrated and shared promptly, difficulty of air traffic control and complexity of coordination are not what they used to be. While fighting these uphill battles, we will remain attentive, caring, and innovative by strengthening communication with related civil aviation organizations and committing to expertise training. While adhering to the Aviation System Block Upgrades (ASBU) set out by the ICAO Global Air Navigation Plan (GANP), we are also actively introducing relevant cooperation and information sharing mechanisms, adopting new technologies, upgrading air traffic service softwares and hardwares, as well as improving operation performances of ATC personnel. By meeting international standards, Taipei FIR will be marching forward to safety, efficiency, quality, and sustainability!

Director, Air Navigation and Weather Services, CAA, MOTC

Joyce L. C. Huang



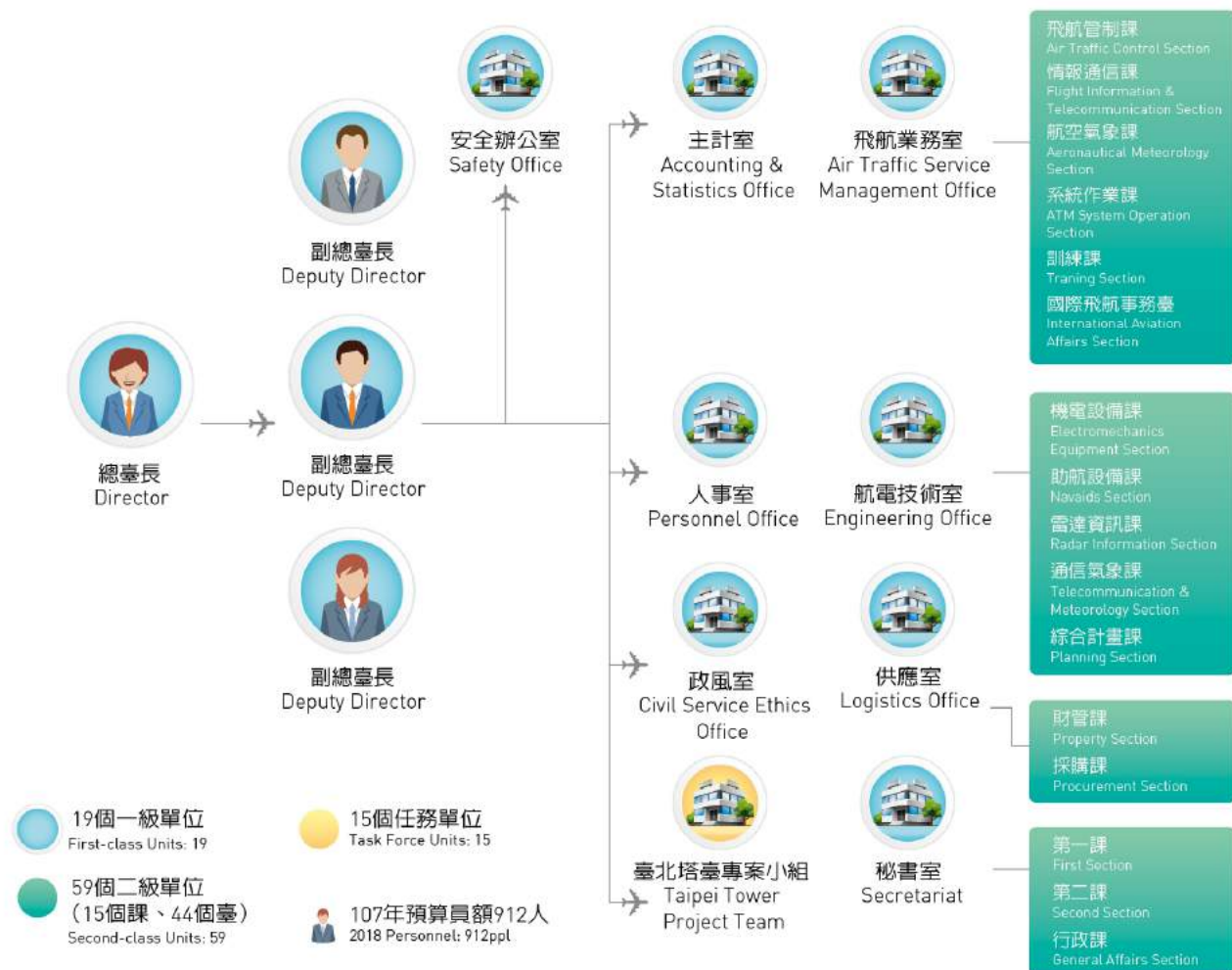




## 組織架構 Organization

精準溝通，造就高效團隊  
Communicating precisely for an efficient team

02







## 施政成果 Achievements

精益求精，開創輝煌格局  
Breaking new ground by striving for perfection

# 03

### 一、飛航管制

#### (一) 臺北飛航情報區管制架次續創新高

107 年全區總管制架次達 1,756,902 架次，較 106 年成長 5.74%。

#### (二) 啓用「L4 新航路」

為紓解 B576 航路壅塞航情，我國與日本、韓國合作建置 B576 平行航路，107 年 5 月 24 日啓用「L4 新航路」，往返日韓可縮短航程、減少航機交匯，提升飛航安全，達到節能減碳效果。

#### II. Launching new routes L4

In order to relief the congestion on route B576, the "new route L4" that parallel to B576 was implemented and launched on May 24th, 2018 in cooperation with Japan and South Korea. The new route has shorten fly time between Japan and South Korea, reduces crossing flight paths, resulting in improved flight safety, energy reduction and carbon reduction.

### 1. Air Traffic Control

#### I. Number of controlled flight movements in Taipei FIR breaks record high

The total number of controlled flight movements in 2018 was 1,756,902, an increase of 5.74% comparing to 2017.



啓用 L4 航路  
Initiation of new route L4

#### (三) 廣續辦理塔臺管制員督查作業

接續過往三年分別實施塔臺管制員、雷達管制員、協調員及班務督導專案督查，廣續辦理塔臺管制員督查作業，檢視塔臺同仁對發生飛航服務相關事件通報及遇突發狀況之處理能力，自 107 年 4 月至 6 月赴各機場管制臺，以口試方式進行督查，共完成 20 梯次、69 人次。

#### (四) 與福岡飛航情報區啓用交管 (Transfer of Control, TOC) / 接管 (Assumption of Control, AOC) 雷達自動交接管功能

為因應近年東亞地區航行量大幅度增長，107 年 6 月 1 日與福岡飛航情報區啓用 TOC/AOC 雷達自動交接管功能，透過自動化功能代替原人工口頭交接管作業，大幅減少雙方管制員之協調及工作量，增進雙方飛航服務效率及提升飛航安全。

#### (五) 提供緊急應變處置及醫療救護支援

各航管作業單位除提供航機飛航管制服務外，並於航機發生鳥擊、機械故障、乘客身體不適等異常狀況時提供緊急應變處置，以確保航機及乘客安全，107 年共計提供 513 次緊急應變處置。

#### (六) 辦理招生說明會

為鼓勵青年學子踴躍報考飛航管制員，107 年 3 月至 5 月分別赴元智、海洋、淡江及輔仁大學辦理民航特考飛航管制員招生說明會，計 4 場總計約 300 人次參與。

#### VI. Recruitment Talk

In order to promote air traffic controller recruitment, 4 CAA air traffic controller recruitment talks were held in Yuan Ze University, National Taiwan Ocean University, Tamkang University and Fu Jen Catholic University, with a total participant number of around 300.

#### III. Continued ATC proficiency surveys on Tower controllers

Following the proficiency surveys carried out in the past three years on Tower Controllers, Radar Controllers, Coordinators and Supervisors, a survey on Tower Controllers was conducted to examine controllers' ability on settling emergency or abnormal situations, as well as familiarization on the compulsory reporting process. From April to June 2018, a total of 20 sessions of oral examination were carried out on 69 controllers from different air traffic control towers.

#### IV. The Transfer of Control (TOC) and Assumption of Control (AOC) Automatic Radar Handoff Function with Fukuoka FIR has been launched

In response to the rapidly grow on air traffic volume in East Asia area, the TOC/AOC Automatic Radar Handoff Function with Fukuoka FIR has been launched on June 1st, 2018. With automation replacing manual verbal handoff operations, coordination between and workload of both side has been significantly reduced, which in turn improved efficiency of air traffic services and flight safety for both parties.

#### V. Emergency response and medical assistance

In addition to providing Air Traffic Control services, all facilities are prepared to handle abnormal or emergency situations such as bird strikes, mechanical failures, and aircraft with passengers needed urgently medical supplies. This ensures the safety of passengers and aircraft. A total of 513 emergency situations were handled in 2018.



飛航管理系統  
Air Traffic Management System(ATMS)



## 二、飛航情報

### (一) 強化「航空情報服務網 (Aeronautical E-Services, AES)」功能

107 年 4 月 24 日新增氣象圖查詢與編輯、氣象資料可自行編輯機場清單、熱帶氣旋警告及火山灰警告報文分區功能及航行警示圖無人載具飛航公告篩選功能。

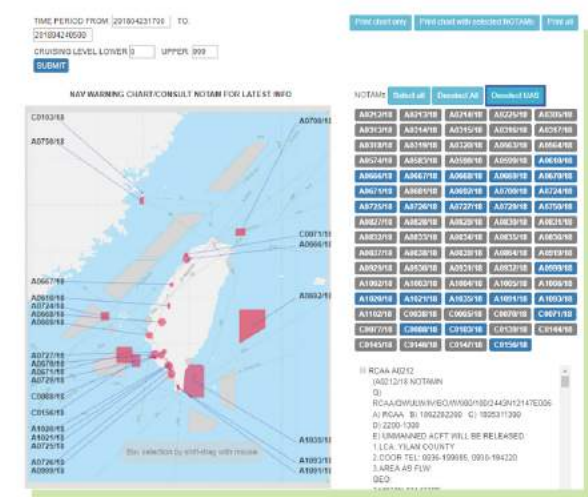
107 年 11 月 20 日新增飛航前簡報項下「更新」並以顏色提示相異處、不重複提供飛航公告及「濾除臺北飛航情報區無人載具」功能、氣象資料查詢提供下拉清單輔助、提供過去 24 小時機場天氣資料查詢等功能。

On November 20th, 2018, new functions in pre-flight briefing including "UPDATE" with color labeling, "Remove RCAA UAS NOTAM" filter, drop-down list assistance in MET query and providing "in 24hr" METAR query were launched.

## 2. Flight Information

### I. Enhancement of Aeronautical E-Services (AES)

Starting from April 24th, 2018, new functions of meteorological charts query and editing, METAR/TAF query by editable airport list, tropical cyclone and volcanic ash advisory by filter and UAS related NOTAM in conjunction with navigation warning chart by filter were launched in the AES system.



AES 新增航行警示圖無人載具飛航公告篩選功能  
AES launched new function of UAS related NOTAM in conjunction with navigation warning chart by filter

### (二) 實施飛航公告安全事件通報機制

當國際發布飛航公告、飛航指南修正、飛航指南補充通知書資料且涉及空域、航行警示、軍事演習、飛彈射擊等影響飛航安全時，均主動轉知航空公司注意，確保飛航安全。107 年總計通報 1,717 次。

### II. Notifications of NOTAM/aviation safety information

Proactively informing airlines of NOTAMs, AIP amendments, AIP supplements, and other aeronautical information regarding airspace, navigation warnings, missile warnings and other military activities that may affect aviation safety in our airspace. A total of 1,717 such notifications were reported in 2018.

## 三、航空通信

### (一) 辦理「飛航訊息處理系統 (ATS Messages Handling System, AMHS)」南北異地備援演習

107 年 7 月 17 日進行 AMHS 南北異地備援演習，仍能與鄰區交換各類飛航訊息，提供不中斷的航空通信服務。

## 3. Aeronautical Telecommunication

### I. The AMHS Drill for Remote Backup Operation

The annual AMHS drill for remote contingency operation was held at both NATSP and SATSP on July 17th, 2018, to ensure aeronautical telecommunication services are provided uninterruptedly.

### (二) 廣續推動「飛航訊息處理系統」(AMHS) 汰新計畫

為符合用戶需求之使用介面及提升系統功能，107 年完成系統建置、操作人員種子教官訓練、工廠驗收測試、陣地驗收測試、用戶操作訓練，並於 10 月 23 日完成系統驗收。

### (三) 汰換總臺助航設備服務費收費系統

因應飛航服務費徵收作業、維持收費正確性及增加相關費用帳務處理需求，107 年完成系統開發、使用者及維護人員教育訓練、陣地測試，並於 12 月 24 日完成系統驗收，廣續辦理平行作業與轉移啓用。



總臺助航設備服務費收費系統頁面  
ANWS Navigation Aids Facilities Charge Collection System

### II. The AMHS Replacement Project

2018 marks the final phase of the AMHS Replacement Project. All of the tasks, including the system implementation, system administrator training, factory acceptance test, site acceptance test, and user operational trainings were completed, and the final system acceptance was completed on October 23rd, 2018.

### III. ANWS Navigation Aids Facilities Charge Collection System Replacement

In 2018, ANWS launched a replacement project to implement a new ANWS Navigation Aids Facilities Charge Collection System to impose ATS charge, maintain the accuracy of bills and accounts, extend other related demands (such as credit enforcement), and contract management. In the process of system development, a series of users and maintenance staff trainings and on-site system testing were completed, and the new system was accepted on December 24th, 2018, followed by parallel operation and system transfer.





## 四、航空氣象

### (一) 強化航空氣象服務網 (Aeronautical Meteorological Service Page, AMSP) 功能

- 107 年 6 月 1 日起調整以新網址 (<https://aoaws.anws.gov.tw>) 提供服務，強化資訊安全及服務穩定。
- 107 年 6 月 5 日起航空氣象服務網新增最近兩小時衛星雲圖及雷達回波圖動畫功能，提升搭機民衆掌握航班狀態與即時天氣動態之關聯性。
- 107 年 8 月 21 日新增航空氣象服務網「直昇機專區」，提供直昇機飛行任務所需航空氣象資料。

### (二) 啓用航空氣象收發報系統

107 年 9 月 3 日航空氣象收發報系統正式上線服務，提供友善的氣象資料輸入介面，並建置航空氣象電報顯示及查詢網頁，提高航空氣象電報發布效率及正確性，提升臺北飛航情報區航空氣象服務品質。

### (三) 調整馬祖南竿機場氣象測報作業

為利赴馬祖搭機旅客及早掌握天氣資訊，107 年 4 月 1 日起，南竿機場氣象觀測資料發布時間於每年 3 月至 6 月調整為 04:30~18:30，其餘月份為 05:00~19:00。



AMSP 新增「直昇機專區」  
New "Helicopter Area" page added to AMSP

## 4. Aeronautical Meteorology

### I. Enhance the functionality of the Aeronautical Meteorological Service Page

- A new website (<https://aoaws.anws.gov.tw>) has been launched on June 1st, 2018 for enhanced information safety and service stability.
- From June 5th, 2018 onwards, the Aeronautical Meteorological Service Page has been added with animated satellite cloud image and radar echo image of the past two hours to enhance flight passengers' understanding on flight status and real-time weather.
- "Helicopter Area" has been added to the Aeronautical Meteorological Service Page on August 21st, 2018 for providing aviation weather information required for helicopter flights.

### II. Aviation Weather Report Transmitting and Receiving System launched

Aviation Weather Report Transmitting and Receiving System has been officially launched on September 3rd, 2018 to provide a user-friendly weather information input interface and an aviation weather report display and inquiry web page, for improved aviation weather report issuing efficiency and accuracy, as well as a better quality of aviation weather services in Taipei FIR.

### III. Matsu Nangan Airport weather forecast operational adjustment

From April 1st, 2018 onwards, weather reports of Nangan Airport will be issued between 04:30~18:30 from March to June, and between 05:00~19:00 for the rest of the year, so to provide passengers arriving at Matsu with weather information as soon as possible.



啓用航空氣象收發報系統  
Launched of The Aviation Weather Report Transmitting and Receiving System



### (四) 提供航空氣象簡訊服務

為利航機適航及連假疏運作業即時決策參考，提供民航局、機場等相關單位各民航（含軍民合用）機場不適航天氣、連續假期及疏運計畫機場天氣預報、機場颱風警報單發布及顯著天氣簡訊通報等 6 種航空氣象通報簡訊，各項簡訊發布次數達 1,591 次。

### (五) 提供航空氣象資料服務

提供各單位相關民航機場航空氣象電話諮詢服務計 3,366 次；提供政府機關及接受民間機構申辦機場氣象資料計 185 次，做為學術研究、航空公司貨損調查、機場氣象特性瞭解、飛安事件調查、儀航程序規劃及場站施工參考之用。

### (六) 執行「交通部民用航空局與中央氣象局氣象資料與預報模式系統作業技術合作協議」

107 年度完成劇烈天氣監測系統 (QPESUMS) 航管待命區域警戒燈號顯示介面上線及總臺端 QPESUMS 系統主機架設。

### (七) 編製航空氣候年報

107 年 3 月 31 日完成 106 年航空氣候年報，置於總臺官網 (<https://www.anws.gov.tw>) 電子刊物下，提供各單位下載使用民用機場之氣候統計資料。



### IV. Providing aeronautical meteorology text message services

Aeronautical meteorology text messages in 6 categories (including unairworthy weather, weather forecast for consecutive holidays, typhoon warnings and significant weather message delivery) were provided to the CAA, airports and other civil aviation organizations. This helps them to accurately predict airworthiness conditions and air traffic management for immediate decision-making; a total of 1,591 messages were delivered in 2018.

### V. Providing aeronautical meteorology data services

3,366 telephone inquiries related to aeronautical meteorology at civil aviation airports were handled, as well as 185 airport meteorology data requests from both public offices and civil organizations. These services were useful in a variety of purposes, including academic research, air cargo damage investigations, airport weather analysis, flight safety investigations, instrument flight rules (IFR) procedure design, airport construction, etc.

### VI. Execution of the "Operational-technological cooperation agreement for meteorological data and forecasting models systems between the MOTC's CAA and Central Weather Bureau (CWB)"

In 2018, Quantitative Precipitation Estimation and Segregation Using Multiple Sensor (QPESUMS) warning lights display interface in the ATC main holding area was launched, and QPESUMS system host of the main station was installed.

### VII. Publication of 2017 Aerodrome Climatological Annual Summaries

On March 31st, 2018, the 2017 Aerodrome Climatological Annual Summaries were completed and published on the ANWS's official website (<https://www.anws.gov.tw>). There, statistical weather information for civil airports are available for download.



## 五、航空電子

### (一) 強化通信服務系統

» 辦理「航管數位語音交換系統案」及「臺北飛航情報區數位微波系統案」，107 年完成國外原廠維護訓練與改變管理評估作業，預計 108 年完成汰換，提高系統裝備妥善率及可靠度，確保飛航服務品質。

» 107 年 10 月 1 日正式啟用亞太區域共同虛擬私有網路 (Common Regional Virtual Private Network, CRV) 服務，取代現有與相鄰情報區點對點所組成的航空通訊網路，是未來國際間航空訊息交換、共享新平臺的骨幹基礎，提升本區航空環境作業安全及效率。

### (二) 汰換臺北飛航情報區儀器降落系統 (Instrument Landing System, ILS)

107 年 1 月 29 日、4 月 26 日、5 月 25 日及 12 月 21 日分別汰換及啟用嘉義機場 36 跑道 ILS、高雄機場 27 跑道 ILS、嘉義機場 18 跑道 ILS 與花蓮機場 21 跑道 LDA，並於 107 年完成金門機場 06 跑道 ILS 設備架設及飛測。

## 5. Aeronautical Electronics

### I. Enhancing communication service system

» Carrying out "Air Traffic Control Digital Voice Communication Switching System Project" and "Taipei FIR Northern Digital Microwave Communication System Project", with overseas factory maintenance training and change management assessment were completed in 2018. It is expected that the replacement will be completed in 2019 for enhanced system equipment availability and reliability enhancement, ensuring quality of air traffic services.

» Asia-Pacific Common Regional Virtual Private Network (CRV) service has been officially launched on October 1st, 2018 to replace the existing aviation communication network formed by point-to-point communication among neighboring FIRs. It is the basis for future international aviation information exchange and a new shared platform, improving aviation environment operational safety and efficiency of this region.

### II. Continued replacement of the Taipei FIR ILS

Chiayi Airport's runway 36, Kaohsiung International Airport's runway 27, Chiayi Airport's runway 18 ILS and Hualien Airport's runway 21 LDA were replaced and commissioned on 29th January, 26th April, 25th May and December 21st, 2018 respectively, with Kinmen Airport's runway 06 ILS equipment installation and flight check completed in 2018.



完成汰換嘉義 18 跑道 ILS 設備 -- 左右定位臺  
Replacement of Localizer for Chiayi ILS Runway 18

### (三) 提升金門地區監視訊號品質

107 年 3 月 26 日啟用金門終端航管雷達及增設廣播式自動回報監視系統接收站臺，提供金門終端空域完整監視涵蓋範圍，縮短航機、旅客及貨運停等時間，提升空域運用效率及飛航安全。

### (四) 辦理桃園國際機場場面監控強化系統 (Multilateration, MLAT) 升級案

配合桃園機場滑行道遷建及雙線化工程，調整升級既有 MLAT 系統，107 年完成各站臺新系統調校與測試，改善系統涵蓋與偵測品質，確保塔臺航管人員可即時及準確掌握場面動態資訊。

### (五) 增設各機場助導航之燈光設備

» 107 年 1 月 12 日及 7 月 17 日分別啟用臺東豐年機場 22 跑道及花蓮機場 03 跑道進場燈，協助飛航該機場的航機，有效判斷跑道頭位置，提升飛航安全操作。

» 107 年 12 月 12 日啟用松山機場 10 跑道 B 型警戒燈，強化 10 跑道頭入口處等待位置之識別，降低跑道入侵風險。



啟用金門機場終端航管雷達  
Commission of Kinmen new terminal radar

### III. Enhancing the quality surveillance signal in Kinmen area

On March 26th, 2018, Kinmen terminal radar was commissioned, and two Automatic Dependent Surveillance - Broadcast (ADS-B) receiver stations were newly installed, providing a complete surveillance coverage of the Kinmen terminal airspace, shortening waiting time of flights, passengers and freight logistics, as well as enhancing airspace usage efficiency and flight safety.

### IV. Taoyuan International Airport Multilateration (MLAT) Upgrade Project

In conjunction with the relocation and double-line project of the taxiway at Taoyuan Airport, the existing MLAT system was upgraded. Adjustment and testing of the new system at their stations were completed in 2018, providing improved system coverage and detection quality to ensure immediate and accurate airport ground movement information for tower controllers.

### V. Increasing airport navigational lighting systems

» Taitung Fongnian Airport's runway 22 and Hualien Airport's runway 03 had their approach lighting systems commissioned on January 12th and July 17th 2018 respectively. The approach lighting system can assist flights of their respective airports to effectively confirm location of runway threshold, thus improving flight operational safety.

» Configuration B runway guard lights of runway 10 in Songshan Airport has been launched on December 12th, 2018. A more recognizable runway-holding position of runway 10 can reduce the risk of runway incursion.



增設松山機場 10 跑道 B 型警戒燈  
Adding Configuration B runway guard lights for Runway 10 in Songshan Airport





### (六) 汰換各機場助導航之機電設備

- » 107 年 4 月 13 日及 5 月 17 日分別完成汰換三貂角雷達臺及恆春助航臺 MOF 高壓配箱開關設備。
- » 107 年 5 月 21 日完成汰換高雄機場助航燈光控制系統及機場標燈。
- » 107 年 9 月 10 日完成汰換清泉崗機場助導航裝備高低壓供配電設備，提升助導航裝備電源之可靠性與穩定性。

### (七) 精進資通安全業務及防護作為

- » 107 年 5 月 23 日汰換總臺電子郵件伺服器，完成新舊系統轉移。
- » 107 年 6 月 1 日通過資訊安全管理系統 (Information Security Management System, ISMS) 外部稽核，持續取得 ISO 27001:2013 國際驗證。
- » 執行資訊系統滲透測試、弱點掃描、資安健診等措施，確保飛航服務系統資訊安全。

### (八) 推動本總臺全球資訊網頁改版

107 年執行本總臺官網中英文網頁全面改版，符合國家發展委員會訂定政府網站績效檢核指標及滿足目前民衆透過行動裝置瀏覽網站之趨勢。



新官網主視覺  
A brand-new design of the official website

### VI.Replacing power supply equipment for air navigational facilities

- » Replacement of Sandiaoajiao radar site and Hengchun air navigation site MOF switch was completed on April 13th and May 17th, 2018 respectively.
- » Replacement of air navigation lights control system and aerodrome beacon in Kaohsiung Airport was completed on May 21st, 2018.
- » The electricity distribution systems for navigational aids were replaced at Cingcyuangang Airport on September 10th, 2018. This improves the reliability and stability of the power supply for navigational aids.

### VII.Improvement of information security and protection

- » ANWS email server was replaced on May 23rd, 2018 with the completion of new system transfer.
- » Our Information Security Management System (ISMS) was audited by external auditors on June 1st, 2018 and we successfully achieved ISO 27001:2013 certification.
- » ANWS completed a scan of penetration testing, as well as system vulnerabilities scan and IT security diagnostic assessment. This ensures the cyber security of air traffic service IT systems.

### VIII.ANWS official website revamp

ANWS launched its revamped bilingual official website in 2018 for compliance to the National Development Council's government website evaluation standards, and to meet the rising public demand of web browsing through mobile devices.

### (九) 精進飛航服務系統

- » 汰新飛航訊息處理系統，107 年完成南、北部飛航服務園區系統硬體設備安裝及整合測試、AMHS 與各系統之連線測試及辦理使用者教育訓練。
- » 建置飛航管理系統擴充備援系統 (ATMS-Extended Backup ATC System, EBAS)，汰換原備援航管系統 IBAS，建置與 ATMS 功能及人機介面相近之 EBAS，107 年完成南、北部飛航服務園區及相關塔臺軟體安裝及系統介面整合工作。
- » 自行開發「ADS-B 航機動態顯示系統」，減低航管系統異常時對作業的影響，107 年 8 月正式上線，可即時於航管席位輔助資訊顯示系統 (Supplementary Information System, SIS) 顯示 ADS-B 動態做為管制員比對參考。
- » ANWS had developed their own "ADS-B Air Situation Display System" to reduce impact of ATC system abnormality. The system was officially launched in August, 2018 to immediately display ADS-B tracks in the Supplementary Information System (SIS) to controllers as a cross reference.

### IX.Improvement of Air Traffic Service Systems

- » The ATS Message Handling System was replaced. In 2018, ANWS had completed system hardware installation and integrated testing for South and North ATS Parks, connection testing between AMHS and various systems, as well as conducting user training.
- » The ATMS-Extended Backup ATC System (EBAS) with functions and man-machine interfaces similar to that of ATMS was implemented to replace the Independent Backup ATC System (IBAS). Software installation and system interface integration for South and North ATS Parks and related towers was completed in 2018.



以 EBAS 管制航機  
Using EBAS to provide ATC service

## 六、安全管理

### (一) 落實三階層管控機制

- » 每季召開安全委員會、每月召開安全工作會議、作業單位每周召開安全行動小組會議，監控總臺安全管理系統、追蹤安全相關議題及安全績效達成情形。
- » 107 年辦理「強化安全行動小組方案」，推動作業單位將安全管理事項納入安全行動小組會議運作，加強安全溝通及日常作業風險管理。

## 6.Safety Management System (SMS)

### I. Implementation of a three-level SMS control & monitor scheme

- » Safety meetings were held regularly to enhance safety management systems, conduct follow-up on safety-related issues, and monitor ANWS's safety performance. These meetings included the quarterly Safety Review Committee led by our Director, monthly Safety Working Group and weekly Safety Action Groups.
- » The "Optimizing Safety Action Groups (SAG) Project" was carried out in 2018 to promote inclusion of safety management in SAG meetings, and to enhance communication on safety and improve daily operation risk management.

## (二) 修正安全管理指導文件

107 年修正「飛航服務安全管理實施計畫」、「飛航服務安全管理系統手冊」及「飛航服務安全查核手冊」等安全管理相關文件。

## (三) 強化安全風險管理機制

以作業單位每日簡報 (Briefing)、安全行動小組會議、業務檢討會及臺務會報等機制辨識組織、系統及日常作業危害因子；列管並追蹤相關安全議題辦理情形，落實安全風險管理機制。

持續參與各單位改變管理評估會議，並提出相關建議，識別組織危害因子。

接收內部及外部自願報告，辦理並追蹤自願報告案件辦理情形。

## (四) 執行安全績效控管與查核

107 年度配合民航局，實施 1 次系統性查核及 10 次外部符合性查核，另總臺依自主安全管理精神計執行 16 次內部查核，列管所有查核發現缺失及改善建議，每月及每季追蹤改善情形，以精進服務作業，確保飛航安全。

每月 15 日前將總臺 5 類飛航服務關鍵績效指標達成情形提供予民航局，於安全績效指標值或作業效率指標值未達預期績效時，提報改善行動。

## II. Amendment of SMS documents

In 2018, ANWS revised our organization's "Safety Management Implementation Plan", "SMS System Manual" and "Safety Audit Manual".

## III. Enhancing safety risk management

Organizational, system and daily operations hazard factors are identified through daily briefings reports, safety action group meetings, operations review meetings and ANWS affairs reporting meetings. Progress in safety issues is controlled and monitored as part of the safety risk management.

ANWS have continued to participate in the change management evaluation meetings, and have made relevant recommendations to identify organizational hazard factors.

Internal and external voluntary reports were received, and the cases reported were processed and tracked.

## IV. Safety performance monitoring and safety audits

In 2018, CAA supervised and conducted 1 systematic audit and 10 external compliance safety audits to ANWS. Based on the spirit of autonomous safety management, ANWS also conducted 16 internal safety audits. All deficiencies found in the inspections and improvement suggestions were put under surveillance and control, monthly and quarterly follow-ups are conducted to improve services and ensure flight safety.

Five areas of air traffic services key performance indicators (KPIs) are continuously monitored and measured by ANWS, and the attainments of KPIs are reported to CAA before the 15th day of each month. Improvement measures are proposed when the safety performance indicators (SPI) or operational efficiency indicators do not meet the expected safety targets.



舉辦強化安全行動小組方案成果發表會  
The Safety Action Groups (SAG) optimization results presentation contest

## (五) 辦理安全推廣與訓練

廣續編撰並發送安全文化資訊彙編 4 期、辦理專業知識分享 6 梯次、強化安全行動小組方案成果發表會與風險案例研討會等 12 次安全推廣活動，並出席民用飛航服務組織 (CANSO) 會議，瞭解國際間安全管理資訊與最新趨勢。

舉辦「飛航服務安全管理實施計畫概論」訓練、「飛航服務安全管理訓練」及「飛航服務安全符合性查核複訓」等共 5 梯次，參訓人次計 91 人；相關飛航服務人員年度複訓講授「107 年飛航服務安全管理作業宣導」課程計辦理 22 梯次。

## (六) 推動飛航服務安全管理資訊系統

維護強化文件管理、關鍵績效指標管理、訓練 / 證照 / 席位查核管理及自願報告等功能。

## V. Safety Promotion and Training

ANWS compiled and published a total of 4 issues of safety culture publications, held 6 professional knowledge sharing events, and 12 safety promotional events, including Safety Action Groups optimization results presentation and safety risk case study seminar. ANWS also attended Civil Air Navigation Services Organization (CANSO) meetings to learn about information and trends of international safety management.

A total of 91 participants joined 5 training programs, including "Introduction to Safety Management Implementation Plan" training, "ATS Air Traffic Service Safety Management Training" and "ATS SMS Auditor Training and Auditor Recurrent Training". 22 sessions of annual retrain talk for relevant air traffic service personnel "2018 Air Traffic Service Safety Management Talk" were held.

## VI. Promoting air traffic service safety management information system

ANWS maintained and improved organizational functions such as documentation management, key performance indicator management, training/certification/on-job checking management and confidential reporting.

## 七、交流與合作

### (一) 國際交流與研討

107 年 2 月 2-10 日赴澳洲執行「建置飛航管理系統擴充備援系統案工廠驗收測試會議」，藉由與原廠工程師互動討論，深入瞭解系統各項設計架構，俾利未來的作業程序規劃。

## 7. Exchange and Collaboration

### I. International exchange and seminars

ANWS staff members attended "ATMS-Extended Backup ATC System Factory Acceptance Test Meeting" in Australia from February 2nd to 10th, 2018. Through interactive discussions with factory engineers, a deeper understanding on the system design and architecture was achieved, benefiting future operational procedure planning.





- 107年2月24日-3月11日赴德國執行「飛航訊息處理系統汰新案」工廠驗收測試會議，藉由至原廠進行系統功能測試，確保系統各項功能及參數設定符合機關所需。
- 107年3月4-10日赴新加坡參加「飛航服務人為因素課程」，建立人為因素之相關觀念及管理人為因素之方法，以提升整體表現。
- 107年5月22-25日赴香港執行「國際民航組織氣象情報交換模型（IWXXM）未來建置規劃及航空氣象發展交流會議」，瞭解香港地區航空氣象服務發展方向，做為規劃本區新一代航空氣象作業系統之參考。
- 107年6月3-6日赴日本大阪參加地區性飛航管制作業與技術會議，藉由雙方作業與技術之研討，作為本區終端管制作業之參考，期能提升飛航安全與飛航服務。
- 107年6月7-13日赴泰國曼谷參加「民用飛航服務組織 CANSO 亞太區年會暨工作小組會議」，會中總臺代表分享 106 年安全提升作為，亦表達參與 Multi-Nodal ATFM 及 SWIM 專案的意願。

- ANWS staff members visited Germany from February 24th to March 11th, 2018 for the "ATS Message Handling System Replacement Project" factory acceptance testing meeting. Through system functional testing at the factory, it can be ensured that functions and parameter settings of the system meet demands of relevant authorities.
- ANWS staff members attended "Human Factors in Air Traffic Services Course" in Singapore from March 4th to 10th, 2018 to establish concepts related to human factors and methods on managing human factors for better human performance.
- ANWS staff members attended "ICAO Meteorological Information Exchange Model (IWXXM) Future Implementation Planning and Aviation Meteorological Developmental Exchange Meeting" in Hong Kong from May 22nd to 25th, 2018 to learn about development direction of aeronautical meteorological services in Hong Kong. These will serve as a reference in planning our next generation aeronautical meteorological system.
- ANWS staff members visited Osaka, Japan from June 3rd to 6th, 2018 for a regional air traffic control operational and technical meeting. Discussions on operation and technology will serve as a reference in our terminal control operation, with hope to improve air traffic safety and services.
- ANWS staff members attended "Civil Air Navigation Services Organization (CANSO) Asia-Pacific Annual Meeting and Operation Work Group Meeting" in Bangkok, Thailand from June 7th to 13th, 2018. ANWS representatives shared in the meeting about our effort in improving safety in 2017, as well as showed interest in joining Multi-Nodal ATFM and SWIM projects.

- 107年7月10-12日赴菲律賓參加第11屆非正式東亞飛航管制協調小組會議，會中與香港、日本、菲律賓及韓國各方代表進行討論及協商，藉以提升東亞飛航管制作業間之合作，使飛航管理更流暢及安全。
- 107年7月10-13日赴韓國執行「地區性航空氣象作業及資訊系統發展交流會議」，瞭解韓國航空氣象作業現況及服務內容，做為精進本區未來航空氣象資訊系統規劃之參考。
- 107年9月9-21日赴新加坡參加汰換臺北飛航情報區北區數位微波系統案出國訓練，藉由此訓練可增進航電維護人員架設、調校及故障查修能力，期能提供更穩定的飛航服務通訊品質。
- 107年10月14日-11月3日赴羅馬尼亞布加勒斯特參加汰換航管數位語音交換系統（DVCSS）案出國訓練，藉由此訓練可增進航電維護人員架設、調校及故障查修能力，期能提供更穩定的飛航服務通訊品質。
- 107年10月19日參與中華航空氣象協會舉辦之「颱風預報暨飛航作業研討會」，共約90人與會，會中除分享「臺北飛航情報區颱風作業」外，並與學者、專家討論颱風預報資訊及技術，以持續提升本區之飛航服務品質。

- ANWS staff members visited Philippines from July 10th to 12th, 2018 for the 11th East Asia Air Traffic Management Coordination. Group Meeting. They discussed and coordinated with representatives from Hong Kong, Japan, Philippines and South Korea for a closer cooperation on East Asian air traffic flow control, building a smoother and safer air traffic management.
- ANWS staff members attended "Regional Aviation Weather Operation and Information System Developmental Exchange Meeting" in South Korea from July 10th to 13th, 2018 to familiarize with current conditions of aeronautical meteorological operation and services content in South Korea. These will serve as reference for improving our future aeronautical meteorological information system planning.
- ANWS staff members visited Singapore for Taipei FIR Northern Digital Microwave System Replacement Project overseas training from September 9th to 21st, 2018. Through such training, installation, adjustment and troubleshooting abilities of avionics maintenance personnel can be improved, for a more stable air traffic service telecommunication quality.
- ANWS staff members visited Bucharest, Romania for Air Traffic Control Digital Voice Communication Switch System (DVCSS) Project overseas training from October 14th to November 3rd, 2018. Through such training, installation, adjustment and troubleshooting abilities of avionics maintenance personnel can be improved, for a more stable air traffic service telecommunication quality.
- ANWS staff members attended the "Typhoon Forecast and Aviation Operation Seminar", which had around 90 participants in total, hosted by the Chinese Aeronautical Meteorological Association on October 19th, 2018. Other than sharing the "Taipei FIR typhoon operation", they also discussed with scholars and professionals on information and technology of typhoon forecast to improve air traffic services quality continuously.



2/24-3/11

赴德國執行飛航訊息處理系統汰新案  
Visited Germany for the ATS Message Handling System (AMHS) replacement project



6/7-13

參加 CANSO 亞太區年會暨工作小組會議  
Attended CANSO Asia-Pacific Regional Annual Meeting and Work Group Meeting



9/9-21

赴新加坡參加汰換北區數位微波出國訓練  
Overseas training for Taipei FIR Northern Digital Microwave System Replacement Project in Singapore



10/19

參與中華航空氣象協會舉辦之「颱風預報暨飛航作業研討會」  
Attended "Typhoon Forecast and Aviation Operation Seminar" hosted by the Chinese Aeronautical Meteorological Association



- 107 年 10 月 23-26 日赴日本執行「日本航空氣象資料技術協調會議」，瞭解日方在區域預報模式資料之運用，做為本區航空氣象資訊系統更新之參考。
- 107 年 12 月 5-6 日赴馬爾地夫參與 CANSO 亞太區 2018 年第 2 次工作小組會議，瞭解近期 CANSO 推動區域合作及安全管理各項工作進度，總臺代表亦分享 106 年安全文化問卷調查結果及改進作為。
- 107 年 12 月 20-22 日赴泰國曼谷參加國際民航駕駛員協會（IFALPA）跑道安全小組協調員訓練，以學習跑道安全之相關作為及風險管控方式。

## （二）國內交流與合作

### 加強與航空公司意見交流

- 107 年 1 月 19 日及 24 日分別拜會中華航空公司、長榮航空公司與台灣虎航企業安全室，針對安全風險管理及資訊系統規劃議題進行意見交換。

- ANWS staff members attended "Japan Aviation Weather Information Technical Coordination Meeting" in Japan from October 23rd to 26th, 2018 to understand how information of regional forecast model was used in Japan. These will provide a reference for our aeronautical meteorological system update.
- ANWS staff members visited Maldives for the CANSO Asia Pacific Second Operation Work Group, from December 5th to 6th, 2018 to learn about CANSO's progress of its recent effort to promote regional cooperation and safety management. Representatives from ANWS presented our 2017 safety culture questionnaire results and follow up improvements.
- ANWS staff members visited Bangkok, Thailand for the International Federation of Airline Pilots Association (IFALPA) "Runway Safety Team Coordinator" training, from December 20th to 22nd, 2018 to learn about runway safety measures and risk management methods.

## II. Domestic exchanges and cooperation

### Enhanced communication with Airlines

- ANWS staff members visited the Corporate Safety Office of China Airlines, Eva Air and Tigerair Taiwan on January 19th and 24th, 2018 for an opinion exchange on safety risk management and information system planning.

- 107 年 3 月 9 日參加「航空站安全管理系統研習會」，會中總臺代表擔任課程講座並分享總臺 106 年「我（們）所認為的安全」短片得獎作品及安全管理系統運作經驗。
- 107 年 5 月 16 日協助飛航管制員協會舉辦「107 年航空器駕駛員及管制員業務交流座談會」，藉由管制員與駕駛員面對面之溝通，促進駕駛員瞭解航管作為之緣由，達到良好溝通效果。
- 107 年 5 月 18 日辦理飛航訊息處理系統（AMHS）用戶說明會，計有行政院國搜中心、交通部、民航局、航空公司、航空站、軍方及桃園機場公司等共計 63 位代表參加，有助於用戶更加瞭解新系統之效能。
- 107 年 8 月 1 及 3 日辦理 2 場次「107 年度航空情報研討會」，計有桃園國際機場公司、民航局所屬航空站、總臺及軍方等 26 個單位、69 位代表參加，藉由面對面提問討論，分享航空情報發布作業心得及釐清疑慮，提升本區航空情報發布品質。

- ANWS staff members attended "Airport Safety Management System Seminar" on March 9th, 2018. As a lecturer, the representative from ANWS presented ANWS 2017 "Safety in Our Understanding" winning short films and shared experiences on safety management system operation.
- ANWS assisted Air Traffic Controllers' Association in holding "2018 Aircraft Pilot and Controller Business Exchange Seminar" on May 16th, 2018. Face-to-face communication between controllers and pilots enhanced understanding of pilots on reasons behind controllers' instructions, and had achieved better mutual understanding.
- On May 18th, 2018, the AMHS Introduction for External Users Meeting was held. A total of 63 representatives from the National Rescue Command Center, Ministry of Transportation and Communications, CAA, various airlines, local airports, military authorities, and Taiwan Taoyuan International Airport Corporation attended the meeting, which helped users understand the basic structure and essence functions of the new AMHS system.
- Two sessions of "2018 Aviation Information Seminar" were held on August 1st and 3rd, 2018 respectively. 69 representatives from 26 organizations attended the seminar; participating organizations included Taoyuan International Airport Corporation Ltd, airports under the CAA, ANWS and Military Authorities. Through face-to-face inquiries and discussions, participants were able to share experiences on aeronautical information issuance and clarify their doubts. These helped in improving the quality of Taipei FIR aeronautical information.



10/23-26

日本航空氣象資料技術協調會議  
Japan Aviation Weather Information Technical Coordination Meeting



12/5-6

參加 CANSO 亞太區第二次工作小組會議  
Attended CANSO Asia Pacific Second regional Work Group meeting



8/1、8/3

簡報航空情報發布作業規定  
Presented aviation information issuance operation regulations



8/1、8/3

研討會現場 (高雄場次)  
At the seminar (Kaohsiung)

- 107 年 9 月 18、20 及 27 日辦理 AMHS 用戶操作訓練，計有交通部、民航局、航空公司、航空站、軍方及桃園機場公司等共計 46 位代表參加，增進使用者瞭解 AMHS 之功能。
- 107 年 10 月 5、11、12 日辦理 3 場「航空情報服務網（AES）」用戶訓練，邀請民航局、內政部空中勤務總隊、桃園機場公司、民航局所屬航空站、航空公司、台灣航勤及桃園航勤等 30 個單位，共 105 人參加，會中宣導 AES 各項改善功能，並進行飛航諮詢服務意見交流。
- 107 年 10 月 18 日長榮航空公司機師一行 44 人參訪北部飛航服務園區，有助於機師對飛航服務相關業務之瞭解。
- 107 年 11 月 5、7、9 及 15 日辦理 4 梯次「航空氣象服務網使用者訓練」，分別依基礎訓練、進階訓練、直昇機專區訓練及作業觀摩等方式進行，共 84 人參訓，增進使用者對航空氣象服務網之瞭解。
- 107 年 11 月 8 日赴長榮航空公司參訪簽派中心、飛行模擬機及航太棚廠，提升同仁對飛航產業的相關瞭解。

- The AMHS User Operational Trainings were held on September 18th, 20th, and 27th, 2018. A total of 46 representatives from the Ministry of Transportation and Communications, CAA, various airlines, local airports, military authorities and Taiwan Taoyuan International Airport Corporation attended the training, which helped users understand the operations of AMHS.
- Three sessions of "Aeronautical E-Services, AES" user training were held on October 5th, 11th and 12th, 2018. 105 participants from 30 organizations, including CAA, NASC, Taoyuan International Airport Corporation Ltd, airports under CAA, airlines, Taiwan Airport Service and Taoyuan Airport Service, attended the training sessions. During the training sessions, participants were provided with improved functions of the AES, and underwent opinion exchange on flight inquiry services.
- 44 pilots from Eva Air visited North ATS Park on October 18th, 2018. The visit helped pilots with understanding in air traffic services.
- Four sessions of "Aeronautical Meteorological Service Page User Training" were held on November 5th, 7th, 9th and 15th, 2018 respectively, with respective content of basic training, advanced training, helicopter area training and operational observation. A total of 84 participants took part in the training to understand the Aeronautical Meteorological Service Page (AMSP) web services.
- A visit to Eva Air's dispatch center, flight simulator and aerospace hangar was arranged on November 8th, 2018 for a better understanding on the aviation business.

### 強化與軍方業務協調

- 因應軍方演訓及軍民航機管制，與軍方共召開 49 次會議，研討雙方協調機制，並完成雙方 14 份協議書修正，增進軍民航作業安全。
- 107 年 1 月 9 日空軍戰術管制中心參訪北部飛航服務園區，雙方就戰、航管間作業進行面對面溝通，並就 4-8 月之偏航季節協調因應對策。
- 107 年 4 月 11 日參加中央氣象局辦理「氣象 A20- 氣象培訓者研討會」，會中總臺代表分享訓練經驗及作法，並透過討論，充分瞭解國內（氣象局、空軍及海軍）及國外（美國及香港）作業單位教育訓練發展及成效。
- 107 年 7 月 18 日空軍氣象聯隊吳參謀長啓雄率隊參訪北部飛航服務園區，並進行氣象業務交流，增進軍、民航空氣象單位對彼此作業瞭解。
- 107 年 8 月 10 日及 9 月 18 日空軍作戰指揮部戰術管制聯隊聯隊長率隊參訪總臺，雙方就戰航管協調及防空作戰軍民作業方式進行意見交流。
- 107 年 10 月 1 日空軍氣象聯隊張副聯隊長文弘率隊參訪總臺，雙方就航空氣象測報作業及新收發報系統進行業務交流。

### Strengthening coordination with Military Authorities

- In order to address the Armed Force's military exercises and ATC operations for both civil and military, a total of 49 meetings were held with military agencies. 14 agreements were amended to ensure all military exercises were conducted smoothly and safely.
- Air Tactical Control Center visited the North ATS Park on January 9th, 2018. The two parties communicated face-to-face on operational process and air traffic control, and coordinated on countermeasures against the off-course season from April to August.
- ANWS staff members attended the "Academia to Operation in Meteorology: Meteorology Trainer's Seminar" hosted by Central Weather Bureau (CWB) on April 11th, 2018. Representative from ANWS shared experiences and methods on training, as well as learned about development and effectiveness of domestic (CWB, Air Force and Navy) and overseas (U.S.A. and Hong Kong) educational training work through discussions.
- Chief of Air Force Weather Wing, Wu, Chi-hsiung led a team to visit North ATS Park on July 18th, 2018, during which meteorology business exchange was carried out to deepen understanding between military and civil meteorology organizations on each other's operations.
- Wing commander of Air Tactical Control Wing, the Air Force Combatant Command led a team to visit ANWS on August 10th and September 18th, 2018. We underwent opinion exchange on coordination between operational control and air traffic control, and on military-civilian air defense.
- Deputy Commander of Air Force Weather Wing, Chang, Wen-hung led a team to visit ANWS on October 1st, 2018. The representatives from both sides exchange on aeronautical meteorological forecast and the new Aviation Weather Report Transmitting and Receiving System.



9/18、9/20、9/27

辦理 AMHS 用戶操作訓練  
AMHS user operational training



11/5、11/7、11/9、11/15

辦理 4 梯次航空氣象服務網使用者訓練  
4 sessions of Aeronautical Meteorological Service Page user training



4/11

參加中央氣象局辦理「氣象 A20- 氣象培訓者研討會」  
Attended "Academia to Operation in Meteorology: Meteorology Trainer's Seminar" hosted by Central Weather Bureau



10/1

空軍氣象聯隊張副聯隊長文弘率隊參訪本總臺  
Deputy Commander of Air Force Weather Wing, Chang, Wen-hung led a team to visit ANWS



### (三) 協助媒體及教育單位

- 協助中視新聞、經濟日報、桃園市政府、國家地理頻道與桃園國際機場股份有限公司拍攝飛航管制作業與管制員工作甘苦相關報導。
- 與松山機場及其駐站單位一起合作拍攝「木曜 4 超玩 - 一日松機航務員」節目。
- ANWS collaborated with Songshan Airport and its stationed units to film the program "Muyao 4 Super Playing: A Day as Songshan Airport Flight Operations Officer".

### III. Assisting the media and educational institutions

- ANWS assisted CTV, Economic Daily News, Taoyuan City Government, National Geographic and Taoyuan International Airport Corporation Ltd to report the air traffic control operations and the hard work of the air traffic controllers.



參與拍攝木曜四超玩「一日松機航務員」  
Participating in the filming of Muyao 4 Super Playing as a one-day flight operations officer

### (四) 提供參訪服務

- 107 年接受國內外相關單位參訪，共計 86 梯次 1,796 人次。國外單位計有史瓦濟蘭、韓國、馬來西亞及紐西蘭等，計 7 梯次 80 人次；國內單位計有人事行政總處、交通部、法務部廉政署及法務部調查局等單位，計 79 梯次 1,716 人次，有助於國內、外各界對總臺業務之瞭解，促進業務協調與交流。
- 107 年辦理 1 梯次機關檔案管理金檔獎業務參訪，共計 13 人次，擴散得獎成果效益。

### IV. Facility visits

- In 2018, ANWS hosted several visits to ANWS by various organizations. 86 visits were held in total with 1,796 participants. 7 visits from overseas area, including Kingdom of Eswatini, South Korea, Malaysia and New Zealand, were held in total with 80 participants; 79 visits from domestic organizations, including Minister of Directorate-General of Personnel Administration, Ministry of Transportation and Communications, Agency Against Corruption of the Ministry of Justice and Investigation Bureau, in total with 1,716 participants. These helped deepening understanding on ANWS's work, and facilitated business coordination and exchanges.
- In 2018, ANWS held 1 visit for the Archives Management Quality Awards. 13 people in total participated in these visits; positive results were achieved.



史瓦濟蘭簽派員參訪松山機場管制臺及松山航空氣象臺  
Dispatcher from Kingdom of Eswatini visited Songshan Airport Control Tower and Songshan Weather Station



### (五) 辦理「天際的守護者—飛航管制」主題策展

- 107 年 1 月 2 日推出「天際的守護者 -- 飛航管制」主題策展並置於總臺官網，將歷史檔案數位化，以文字、照片、影片、動畫、測驗、小遊戲等生動活潑素材介紹飛航管制作業。
- 107 年交通部主題策展網站中，民衆瀏覽人次最高，策展期間達 12,259 人次；另透過總臺臉書辦理 3 次直播抽獎，以及 1 次參訪活動，加深民衆對飛航管制的認識。

### V. Themed exhibition of "Guardian of the Sky: Air Traffic Control"

- On January 2nd, 2018, ANWS launched the themed exhibition of "Guardian of the Sky: Air Traffic Control" on our official website as part of the effort to compile digitalized historical documents. Lively materials such as texts, photos, videos, animations, quizzes and games were used to introduce the work of air traffic control.
- On the 2018 MOTC themed exhibition website, a total of 12,259 public visits were made to the website, contributing to the most visited part of the exhibition. Along with the website, three live-streamed lucky draw were held through the Facebook page of ANWS, and one visiting event was held, deepening the public understanding on air traffic control.



參訪北管 Visited North ATS Park



## 八、訓練、演練及席位查核

## (一) 國外訓練

- 飛航服務：飛航訊息處理系統汰新案操作人員種子教官訓練、飛航服務人為因素課程、團隊資源管理訓練課程、飛航安全管理調查與分析課程及跑道安全小組協調員訓練計 5 項，計 6 人次。
- 航空電子：汰換臺北飛航情報區北區數位微波系統案出國訓練及汰換航管數位語音交換（DVCSS）系統案出國訓練計 2 項，計 9 人次。

## (二) 國內訓練

- 專業訓練：飛航管制類 10 項，合計 171 梯次，共 1,279 人次；飛航情報類 6 項，合計 21 梯次，共 80 人次；航空氣象類 7 項，合計 27 梯次，共 307 人次；航空通信類 6 項，合計 9 梯次，共 66 人次；航空電子類 37 項，合計 44 梯次，共 565 人次；其他類專業人員訓練 11 項，合計 20 梯次，共 586 人次。
- 行政知能訓練：計有多元族群文化、消防災害防範訓練、CEDAW 專題 - 談性別主流化之性別平權、年度管理主題訓練及研討等 20 項課程，合計 27 梯次，共 1,325 人次。

## 8. Trainings, Drills and On-the-job Evaluation

## I. Overseas training

- Air Traffic Service: 5 different training programs were held, including ATS Message Handling System Replacement Project operator instructor training, course on human factors in air traffic services, team resource management training course, air traffic safety management investigation and analysis course and runway safety group coordinator training, with a total participant count of 6.
- Aeronautical Electronics: 2 training programs were organized, including Taipei FIR Northern Digital Microwave System Replacement Project overseas training and Air Traffic Control Digital Voice Communication Switch System (DVCSS) Project overseas training, with a total participant count of 9.

## II. Domestic training

- Professional trainings: 10 categories of ATC Training with 171 sessions for 1,279 participants; 6 categories of Flight Information Training with 21 sessions for 80 participants; 7 categories of Aeronautical Meteorological Training with 27 sessions for 307 participants; 6 categories of Aeronautical Telecommunication Training with 9 sessions for 66 participants; 37 categories of Aeronautical Electronics Training with 44 sessions for 565 participants; 11 categories of other Miscellaneous Professional Training with 20 sessions for 586 participants.
- Administrative Knowledge and capability training: A total of 27 sessions of 20 courses, including multicultural Society and culture, disaster prevention training, CEDAW special event on gender equality in gender mainstreaming, annual themed management training and seminar, were offered to a total of 1,325 participants.



辦理「一級副主管及二級主管年度管理主題訓練」  
Annual training for management teams

## (三) 緊急應變演練

- 107 年 5 月 17 日辦理臺北飛航情報中心所屬桃園飛航諮詢臺業務持續運作演練，共 9 人次。
- 107 年 6 月 13 日辦理「107 年度航空器失事或重大意外事件通報及資料整備演練」，共 25 人次。
- 107 年 6 月 20 日辦理飛航管理自動化系統持續運作演練，共 17 人次。
- 飛航管制人員於各機場塔臺進行航管業務持續運作演練 15 梯次，104 人次。
- 飛航情報人員每人每月以備援系統作業 1 次，確保裝備故障緊急應變能力。
- 航空氣象人員各類緊急應變演練（異地備援、航機意外事件發生之緊急應變處理、天然災害及電力中斷、氣象通信裝備故障之緊急處理、代發報演練、各類氣象裝備故障演練及氣象人員支援航管作業演練）30 梯次，277 人次。
- 航空通信人員各類緊急應變演練（飛航管理系統 ATMS 持續運作計畫及系統更新、飛航訊息處理系統異地備援）共 9 梯次，30 人次。
- 航空電子人員各類裝備故障及非法干擾緊急應變演練 36 梯次，240 人次。

## III. Emergency response drills

- Taoyuan Flight Information Station Operational Continuity Drill was held on May 17th, 2018, with a total of 9 participants.
- The annual exercise of "Aircraft Crash or Emergency Reporting and Factual Data Collection" was held on June 13th, 2018, with 25 participants.
- The ATMS Operational Continuity Drill was held on June 20th, 2018 for 17 participants.
- At each tower, Air Traffic Controllers participated in Contingency Drill. There were 15 sessions held in total for 104 participants.
- Flight information personnel used backup systems for daily operation once per person per month, to ensure operational integrity when facing equipment failure.
- Various types of emergency response drills for aeronautical meteorological personnel (remote backup operation exercise; handling urgent aircraft accidents; natural disasters and power outages; handling meteorological telecommunication equipment failure; broadcasting weather reports on behalf of other units; various types of meteorological equipment failures; and supporting air traffic control operation): 30 sessions were held in total for 277 participants.
- Aeronautical telecommunications personnel emergency contingency drills (including ATMS continuous operation planning, system upgrades and AMHS remote backup operation drills): a total of 30 participants attended the 9 drill sessions.
- 36 sessions for aviation ground equipment failure and unlawful interference were held in total for 240 participants.



#### (四) 席位查核

- 為使飛航服務更臻完善，確保同仁適職性，提高飛航管制、飛航情報、航空氣象、航空通信及航空電子等各類人員技術水準，席位查核共完成飛航管制 772 人次（含航管模擬機計 90 人次）、飛航情報 40 人次、航空氣象 70 人次、航空通信 15 人次、航空電子 198 人次及資訊管理 43 人次。

#### (五) 辦理行政院國家關鍵基礎設施防護訪評演習 (Critical Infrastructure Protection, CIP)

- 為增進各機關對國家關鍵基礎設施防護業務之瞭解，107 年 11 月 23 日由行政院國土安全辦公室黃主任俊泰率 11 位訪評委員，至北部飛航服務園區進行防護訪評演習，區分天然災害、資通安全災害及人為災害 3 部分想定進行兵棋推演，提升相關單位各類災害風險管理及危機應變能力。



國家關鍵基礎設施防護訪評演習兵棋推演  
National Critical Infrastructure Protection Military Simulation

#### IV. On-job evaluation

- In order to improve air traffic services, ensure employability and enhance skill levels of various personnel, such as air traffic control, flight information, aeronautical meteorology, aeronautical telecommunication and aeronautical electronics, ANWS has conducted 772 ATC rating checks; Among them, 90 ATC checks were conducted in the simulated environment, 40 flight information checks, 70 aeronautical meteorology checks, 15 aeronautical telecommunications checks, 198 aeronautical electronics checks and 43 information management checks.

#### V. Executive Yuan National Critical Infrastructure Protection (CIP) drill

- On November 23rd, 2018, Director of Office of Homeland Security of Executive Yuan, Huang, Jun-tai led 11 visiting reviewers to the North ATS Park for 2018 Critical Infrastructure Protection(CIP) Assessment. Military Simulation was carried out in 3 sections: natural disaster, information safety disaster and man-made disaster, in the purpose of enhancing disaster risk management and crisis respond capabilities.

## 九、新建及整修工程

### (一) 已完工部分

- 107 年 2 月 2 日完成金門終端航管雷達機房新建工程。

## 9. Construction and Renovation

### I. Completed

- Construction of Kinmen ATC radar shelter was completed on February 2nd, 2018.



金門終端航管雷達機房  
Kinmen ATC radar shelter

- 107 年 7 月 25 日供應室防火隔間、消防設施及周邊道路改善工程取得使用執照，提供民衆及同仁良好的辦公環境。

- Logistics Branch fireproof compartment, firefighting facilities and surrounding road improvement project were obtained constructions and usage license on July 25th, 2018, providing a good workplace environment for the public and colleagues.

- 107 年 12 月 25 日完成臺東作業區備勤室大樓及雷達塔冰水機房裝修工程，提供同仁良好的辦公與休憩環境。

- Renovation of the standby room building and radar tower cooling water facilities in Taitung operation area was completed on December 25th, 2018, providing a good workplace and leisure environment for colleagues.



臺東作業區備勤室大樓及雷達臺冰水機房裝修工程  
Renovation of the standby room building and radar tower cooling water facilities in Taitung area



## (二) 持續辦理部分

- » 臺北雷達設備臺雷達站及油機房外牆整修工程，已於 108 年 1 月 11 日竣工。
- » 北部飛航服務園區作業大樓（A 棟）及餐廳（B 棟）屋頂防水工程，已於 108 年 1 月 15 日竣工。
- » 松山機場 10 跑道端西側進場燈光區新設圍籬工程，預計於 108 年 7 月竣工。
- » 「臺灣桃園國際機場塔臺暨整體園區新建工程」。

· 新建工程部分，107 年完成塔臺群樓內外裝修、機電系統安裝與送電，另塔臺外牆帷幕施作截至 107 年 12 月底工程總進度達 91.68%。

· 桃園國際機場塔臺暨整體園區新建辦公室裝修工程，預計於 108 年 10 月竣工。

## II. Projects in progress

- » Outer wall renovation of Taipei radar site and engine room was completed on January 11th, 2019.
- » Rooftop waterproofing of North ATS Park operational building (Building A) and cafeteria (Building B) was completed on January 15th, 2019.
- » Fence installation of Songshan Airport's runway 10 west approach light area is estimated to be completed in July, 2019.
- » "Taiwan Taoyuan International Airport New Air Traffic Control Tower Complex Construction Project"

· For the new construction project, the interior and exterior decoration of the ATC Tower's annex was completed in 2018, as well as installation and power transmission of the electrical and mechanical systems, the curtain wall of the ATC tower was still in the construction. Total progress of the construction by the end of December 2018 was 91.68%.

· Renovation of newly built offices in Taoyuan International Airport air traffic control tower complex is estimated to be completed in October, 2019.

- 塔臺自動化系統部分，107 年 7 月 31 日完成定位安裝，10 月 26 日完成陣地測試，12 月 21 日完成系統各類種子教官訓練。
- 107 年辦理公共藝術民衆參與風箏繪畫比賽，得獎作品製作為紀念小風箏，並於 6 月 5 日辦理推廣講座及頒獎典禮。
- 預計 108 年底完成新塔臺所有工程、塔臺自動化系統平行試運轉、新舊塔臺作業轉移及公共藝術設置成果，展現桃園機場塔臺園區新風貌。

· As for the ATC tower automatic system project, it had been installed on July 31st, 2018, the Site Acceptance Test was completed on October 26th, and the instructor training was completed on December 21st.

· A public art kite design competition was held in 2018 with the winning work were commemorating small kites. The promotion lecture and award ceremony was held on June 5th.

· It is estimated that by the end of 2019, all of the construction work of the new ATC tower, ATC tower automatic system parallel test run, transfer and cutover, and the installation of the public art will be completed, showing a whole new look of the Taoyuan Airport ATC tower complex.



塔臺自動化系統種子教官訓練  
ATC automatic system instructor training



公共藝術推廣講座  
Public art promotional talk



桃園新塔臺群樓外觀  
Outlook of Taoyuan new ATC tower complex



臺北雷達設備臺雷達站及油機房外牆整修工程  
Outer wall renovation of Taipei radar site and engine room





## 服務實績 Performance

激盪潛能，匯萃卓越表現  
Exploiting potentials for excellent performances

04

### 一、飛航管制 Air Traffic Control

#### 總管制架次 Total Flight Movements



107 年總管制架次為 1,756,902 架次，較 106 年增加約 **5.74%**。

Total number of controlled flight movements in 2018 was 1,756,902, a **5.74%** increase compared with 2017.

#### 航路管制架次 Area Control Flight Movements



107 年航路管制架次為 563,324 架次，較 106 年增加約 **5.20%**。

The number of en-route flight movements in 2018 was 563,324, a **5.20%** increase compared with 2017.

#### 近場管制架次 Approach Control Flight Movements



107 年近場管制架次為 660,424 架次，較 106 年增加約 **6.04%**。

The number of approach control flight movements in 2018 was 660,424, a **6.04%** increase compared with 2017.

#### 機場管制架次 Aerodrome Control Flight Movements



107 年機場管制架次為 533,154 架次，較 106 年增加約 **5.94%**。

The number of aerodrome control flight movements in 2018 was 533,154, a **5.94%** increase compared with 2017.

### 二、飛航情報 Flight Information

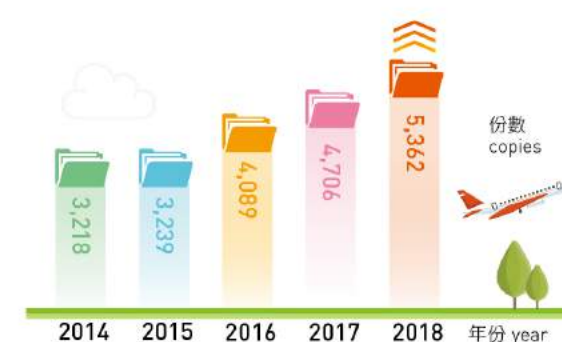
#### 處理飛航計畫 Filed Flight Plans



107 年處理飛航計畫 281,067 份，較 106 年增加約 **7.19%**。

The number of flight plans processed in 2018 was 281,067, a **7.19%** increase compared with 2017.

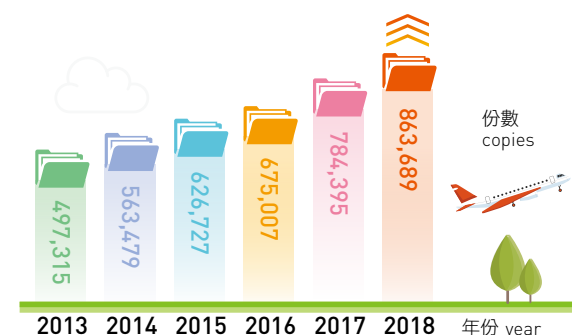
#### 發布本區飛航公告 Notice to Airmen



107 年發布本區飛航公告 5,362 份，較 106 年增加約 **13.94%**。

The number of NOTAMs issued by Taipei FIR in 2018 was 5,362, a **13.94%** increase compared with 2017.

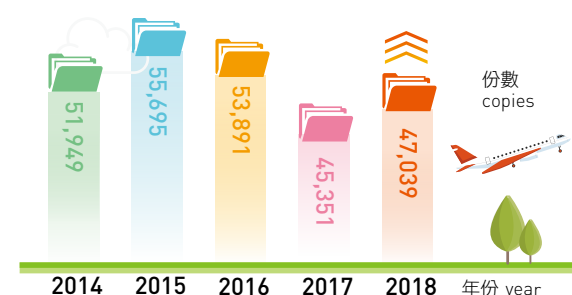
### 處理他區飛航公告 NOTAMs from Other Countries



107 年處理他區飛航公告 863,689 份，較 106 年增加約 **10.11%**。

The number of NOTAMs from other regions processed in 2018 was 863,689, a **10.11%** increase compared with 2017.

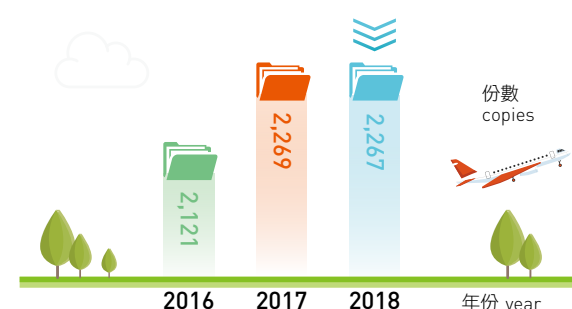
### 提供飛航文件 Flight Documents



107 年提供飛航文件 47,039 份，較 106 年增加約 **3.72%**。

The number of flight documents provided in 2018 was 47,039, a **3.72%** increase compared with 2017.

### 標示機場場面飛航公告 Aerodrome NOTAM Display

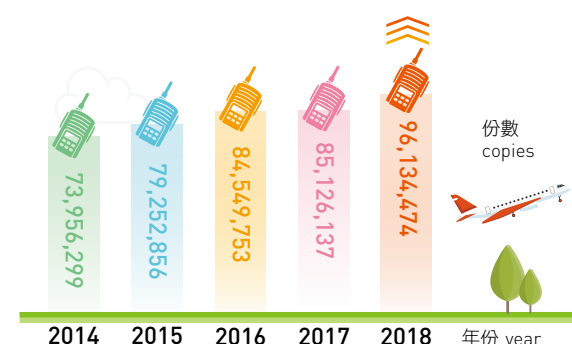


107 年標示機場場面飛航公告 2,267 份，較 106 年減少約 **0.09%**。

In total 2,267 NOTAMs were marked on aerodrome charts in 2018, an **0.09%** decrease compared with 2017.

## 三、航空通信 Aeronautical Telecommunication

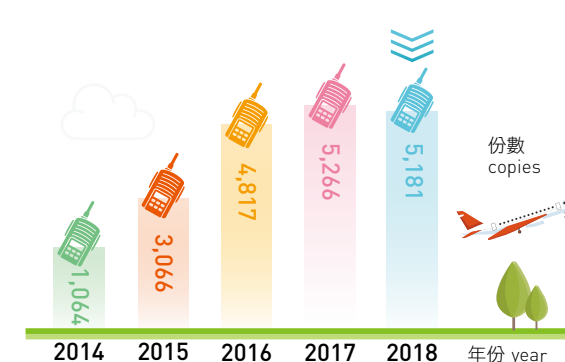
### 航空固定通信報量 Aeronautical Fixed Telecommunication Service messages



107 年航空固定通信報量為 96,134,474 份，較 106 年增加約 **12.93%**。

The total amount of aeronautical fixed telecommunication service messages handling in 2018 was 96,134,474, a **12.93%** increase compared with 2017.

### 航空行動通信報量 Aeronautical Mobile Telecommunication Service messages



107 年航空行動通信報量為 5,181 份，較 106 年減少約 **1.61%**。

The total amount of aeronautical mobile telecommunication service messages handling in 2018 was 5,181, a **1.61%** decrease compared with 2017.

## 四、航空氣象 Aeronautical Meteorology

107 年度執行機場氣象測報、航路預報、機場預報及天氣守視等作業工作成果表

Airport Weather Observation, Route Forecast, Airport Forecast and Weather Watch Operational Result Statistics in 2018.

業務類別 Category	工作項目 Items	工作成果 Results				
		103 年 2014	104 年 2015	105 年 2016	106 年 2017	107 年 2018
機場氣象測報 Airport Weather Observations	民航機場天氣觀測（包括定時觀測及特別觀測等二項）（註 1） Civil Airport Weather Observation (including regular observation and special observation) [Note 1]	119,405	120,126	112,432	107,878	105,564
	局屬民航機場天氣報告 CAA Civil Airport Weather Report	122,492	122,979	115,157	111,019	108,851
	民航機場趨勢預報 Civil Airport Trend Forecast	104,294	104,924	107,689	107,346	105,567
	民航機場天氣警報 Civil Airport Weather Warning	202	165	250	176	150
	民航機場低空風切警報 Civil Airport Low Level Wind Shear Warning	560	698	1,028	974	855
	桃園機場氣象雷達觀測（註 2） Taiwan Taoyuan International Airport Weather Radar Observation [Note 2]	81,841	85,152	96,487	93,261	83,573
	合計 Sub-total	433,017	437,034	436,749	419,667	405,902





業務類別 Category	工作項目 Items	工作成果 Results				
		103 年 2014	104 年 2015	105 年 2016	106 年 2017	107 年 2018
 航路預報 Route Forecasts	各種分析天氣圖表 Various Analytical Weather Charts	41,119	41,109	41,183	41,093	40,908
	高空風溫度預報圖 High Altitude Wind Temperature Forecast Chart	30,838	30,883	30,741	30,195	27,719
	顯著天氣預報圖 Significant Weather Forecast Chart	5,844	5,840	5,856	5,842	5,840
	合計 Sub-total	77,801	77,832	77,780	77,130	74,467
 機場預報 Terminal Aerodrome Forecasts	編發機場預報 (註3) Issuing Terminal Aerodrome Forecast(TAF) (Note 3)	16,060	16,212	15,152	16,344	16,351
	機場預報修正 TAF AMD TAF Revision(TAF AMD)	316	454	496	355	370
	合計 Sub-total	16,376	16,936	15,648	16,699	16,721
 天氣守視 Weather Watches	顯著天氣資訊 Significant Weather Information	1,635	1,471	1,874	1,372	1,402
	飛機報告 Aircraft Report	522	600	609	554	495
	本區機場天氣報告 (註4) Regional Airport Weather Report (Note 4)	111,653	134,204	135,532	145,420	145,362
	AMHS 氣象電報 AMHS Weather Dispatch	5,451,576	5,787,617	6,108,760	6,705,328	7,206,573
	短時預報 Short-term Forecast	1,464	1,464	1,464	1,460	1,460
	天氣影像圖 (註5) Weather Graphics (Note 5)	574,261	576,173	784,005	1,237,968	1,238,208
	民航機場颱風警報 Civil Airport Typhoon Warning	214	311	315	341	415
	合計 Sub-total	6,141,321	6,501,836	7,032,559	8,092,443	8,593,915
	總計 Total	6,668,515	7,033,638	7,562,736	8,605,939	9,091,005

註 1：106 年 1 月 1 日起，恆春機場飛航服務觀測時間變更為每日上午 9 時至下午 3 時，並配合機場作業時間編發機場預報 (TAF)。  
Note 1: Since January 1st, 2017, the aeronautical meteorological service [observation hours] has adjusted to 09:00AM to 3:00PM every day at Hengchun Airport, and The supply of Terminal Area Forecast (TAF) coordinates with each other.

註 2：107 年 8 月 22 日~9 月 12 日桃園都卜勒氣象雷達停機，進行發射機汰換作業。  
Note 2: The Taoyuan Doppler weather radar was shut down from August 22nd to September 12th, 2018 for transmitter replacement.

註 3：102 年 2 月起新增提供七美機場全日機場預報 (TAF)，另自 104 年 4 月起，於每週二及週五新增提供望安機場預報 (TAF)。  
Note 3: Since February 2013, All-day TAF has been provided at Qimei Airport, and TAF has been provided at Wangan Airport every Tuesday and Friday since April 2015.








註 4：102 年 1 月起濾除與本區相同報頭之大陸地區天氣報告。  
Note 4: Chinese weather reports with the same prefix as Taipei FIR have been screened out since January, 2013.

註 5：102 年 1 月起新增可見光、紅外線頻道及歐洲衛星等多項衛星產品；105 年 9 月起接日本向日葵八號高解析度衛星資料。  
Note 5: Since January 2013, satellite-based products, including visible light, infrared channels, and European satellites, have been employed. Since September 2016, ANWS has received high resolution satellite data from Japan's Himawari-8 satellite.

## 五、航空電子 Aeronautical Electronics

系統別 System	年度 Year	103 年 2014	104 年 2015	105 年 2016	106 年 2017	107 年 2018
 雷達設備妥善率 Radar Equipment Availability		99.9873%	99.9920%	99.9879%	99.9989%	99.9948%
 助航設備妥善率 Navigation Aid Equipment Availability		99.9769%	99.9853%	99.9395%	99.9915%	99.9892%

## 六、其他飛航服務系統妥善率 Availability of Other Air Traffic Service Systems

系統別 System	年度 Year	103 年 2014	104 年 2015	105 年 2016	106 年 2017	107 年 2018
 飛航管理系統 ATMS Air Traffic Management System(ATMS)		100%	99.9938%	99.9963%	100%	99.9967%
 航空情報服務系統 AISS Aeronautical Information Service System(AISS)		99.9625%	99.9748%	99.8951%	99.9840%	99.9928%
 飛航訊息處理系統 AMHS Air Traffic Services Messages Handling System(AMHS)		99.9950%	99.9941%	99.9583%	99.9949%	99.9911%
 航空氣象服務網 AMSP Aeronautical Meteorological Services Page(AMSP)		99.92%	99.90%	99.9333%	100%	100%
 數位語音交換系統 DVCSS Digital Voice Communication Switching System(DVCSS)		100%	100%	100%	100%	100%
 飛航服務業務網路 ASN ATS Service Network(ASN)		99.994%	99.994%	99.999%	99.98%	100%
 行政網路 OAN Office Administration Network(OAN)		100%	100%	99.979%	100%	100%





## 收入支出 Finances

超越預期，創造持續收益  
Exceeding expectations for continued profit

05

### 一、收入 Revenue

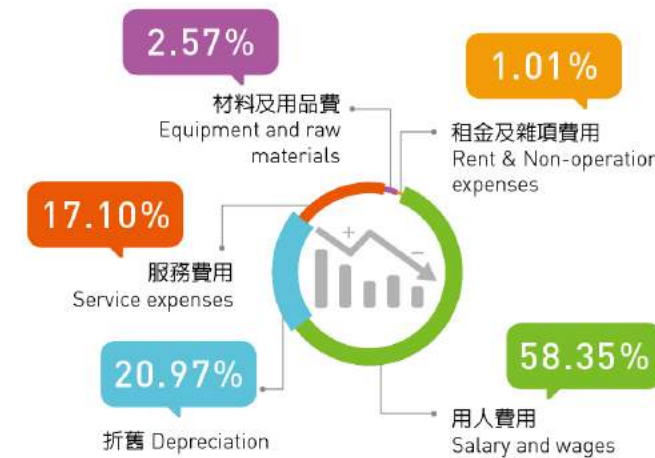


年度 Year	收入 Revenue
103 年 /2014	3,200,518,619 元 / TWD
104 年 /2015	3,410,849,007 元 / TWD
105 年 /2016	3,657,185,339 元 / TWD
106 年 /2017	3,926,905,083 元 / TWD
107 年 /2018	4,168,629,288 元 / TWD

註：107 年度總收入 41 億 6,862 萬 9,288 元，較 106 年度增加約 **6.16%**。

Note: 2018 total revenue: 4,168,629,288 TWD, a **6.16%** increase compared with 2017.

### 二、支出 Expenditure



年度 Year	支出 Expenditure
103 年 /2014	2,588,163,623 元 / TWD
104 年 /2015	2,568,547,032 元 / TWD
105 年 /2016	2,464,174,412 元 / TWD
106 年 /2017	2,318,562,496 元 / TWD
107 年 /2018	2,292,412,786 元 / TWD

註：107 年度總支出為 22 億 9,241 萬 2,786 元，較 106 年度減少約 **1.13%**。

Note: 2018 total expenditure: 2,292,412,786 TWD, a **1.13%** decrease compared with 2017.

### 三、盈餘 Surplus

107 年度作業科目 Current expenditures details for 2018	收入 Revenue	支出 Expenditure
過境航路服務費 Overflight charge	2,230,540,000	
飛航服務費 Air traffic services charge	1,894,489,659	
業務外收入 Non-operation income	33,893,435	
租金及權利金收入 Rent and premium	8,158,194	
航空通信費 Tele-communication facilities fees	1,512,000	
停車費 Parking fees	36,000	
用人費用 Salary and wages		1,337,680,865
折舊 Depreciation		480,701,466
服務費用 Service expenses		392,032,251
材料及用品費 Equipment and raw materials		58,910,816
租金、償債與利息 Rent, debt repayment and interest expenses		9,159,151
稅捐與規費 Tax and charges		7,840,874
會費、捐助、補助、分攤與交流活動費 Membership fees, donations, reimbursements, shared costs and public relations expenses		2,438,435
業務外費用 Non-operation expenses		3,648,928
合計 Total	4,168,629,288	2,292,412,786

盈餘 Surplus 18 億 7,621 萬 6,502 元。

註：107 年度盈餘 18 億 7,621 萬 6,502 元，較 106 年度增加約 **16.66%**。

Note: 2018 budget surplus: 1,876,216,502 TWD, a **16.66%** increase compared with 2017.





## 未來展望 Future Development

創新遠瞻，守護空中安全  
Innovating for air traffic safety

# 06

為因應本區日趨成長之航行量及國內外民航環境變化，未來推動工作重點如下：

### 一、持續完善安全管理系統，強化飛航服務人員素質及運用

- » 廣續推動安全管理系統、定期檢討、落實安全風險管理、監控各項關鍵績效指標達成情形、檢視安全政策與目標。
- » 持續蒐集並累積安全資料，作為長期風險監控及趨勢分析之工具。
- » 因應未來航行量之增長趨勢，辦理長期航管人力需求評估，研析席位變化與所需人力。

To cope with the increasing air traffic flow in Taipei FIR and the worldwide environmental changes of the civil aviation industry, ANWS's aspirations for future developments are as follows.

### I. Continuous improvement of SMS as well as the enhancement of personnel quality on providing air traffic services

- » Continue to promote safety management system, evaluate regularly, implement safety risk management, monitor key performance indicators, and review safety policies and aims.
- » Continue to collect and accumulate safety information, which serves as a tool for long-term risk monitoring and trend analysis.
- » Carry out long-term ATC human resource demand assessment, as well as analyze changes on positions and required human resources, in response to future increasing trend of flight volume.

### 二、推動通訊、導航、監視設備及相關飛航服務系統汰新，提升作業安全及效能

- » 廣續推動「臺灣桃園國際機場塔臺暨整體園區新建工程」計畫，進行新舊塔臺系統平行試運轉及系統轉移，如期完成滿足未來作業需求。
- » 廣續辦理汰換航管數位語音交換系統及臺北飛航情報區北區數位微波系統案，提升通信品質及設備可靠度。
- » 持續辦理「汰換臺北飛航情報區儀器降落系統」（106年-110年），確保進場導航系統妥善率。
- » 規劃辦理汰換鵝鑾鼻、三貂角等2座長程航路雷達與汰換花蓮、松山及臺東終端航管雷達案，確保監視設備妥善率及穩定度。
- » 持續辦理飛航訊息處理系統轉移及啟用飛航管理系統擴充備援系統，並研擬飛航管理自動化系統期中升級案，提供優質飛航服務。

### II. Promoting the renovation of CNS/ATM related equipment and systems to enhance operating safety and efficiency

- » Continue to carry out "Taiwan Taoyuan International Airport New Air Traffic Control Tower Complex Construction Project", and undergo parallel testing of ATC systems and conduct system transferal, meeting future operational demand on time.
- » Continue to replace Air Traffic Control Digital Voice Communication Switching System and process the Taipei FIR Northern Digital Microwave System Replacement Project, for better telecommunication quality and equipment reliability.
- » Continue to carry out "The Taipei FIR ILS Replacement Project" (2017-2021) to ensure the availability of air navigational aids.
- » Make plans to replace two long range radars at Eluanbi and Sandiaoqiao, and to replace Hualien, Songshan and Taitung Terminal ATC radars, ensuring properness and stability of surveillance equipment.
- » Continue carrying out the transfer of new ATS Message Handling System and launch the ATMS-Extended Backup ATC System, and to research on Air Traffic Management system mid-life upgrade, for a high quality air traffic service.







### 三、瞭解用戶需求，精進飛航服務作為，提升滿意度

- » 加強與民航業者及軍方等單位溝通互動，提供符合使用者需求之服務。
- » 持續強化航空情報及航空氣象服務網功能，並辦理相關用戶訓練及會議，提升滿意度。
- » 持續協助桃園機場道面整建工程，維持整建工程進行期間之飛航安全與有序服務。

### III. Understand user requirements, improve air traffic services, and increase satisfaction

- » Enhance communication between civil and military aviation entities in order to provide services that meet the needs of airspace users.
- » Enhance the functionality of Aeronautical E-Service and the Aeronautical Meteorological Service Page, and organize user training and meetings to increase satisfaction.
- » Continue to assist Taoyuan Airport with road surface reparation, ensuring air traffic safety and service order during the reparation work.

### 四、積極參與國際會議與交流，持續瞭解國際及區域飛航服務發展趨勢

- » 持續參與民用飛航服務組織（CANSO）與非正式東亞飛航管理協調小組（EATMCG）等相關會議，掌握國際民航組織（International Civil Aviation Organization, ICAO）之新政策趨勢及區域發展之最新狀況。
- » 關注航空系統提升（Aviation System Block Upgrades, ASBU）技術之發展與飛航服務作業之新措施，並藉由與其他國家交流機會，瞭解相關系統與作業實務，確保本區飛航服務作業與國際接軌，相關設施符合國際規範並與他國相容。

### IV. Actively attend international forums to keep updated on development and trends in air traffic services

- » Continue to attend meetings held by CANSO and the East Asia Air Traffic Management Coordination Group (EATMCG) in order to stay on top of regional development plans from the International Civil Aviation Organization (ICAO).
- » Keep a close watch on development and plans for aviation related technology, regulations and practices, specifically on the progress of Aviation System Block Upgrades (ASBU). Through technical exchange with other countries and aviation related international conferences, acquire information on ATS systems and ATS operations, so that the ANS operations, facilities and regulations are in line with global aviation planning and standards
- » Keep close attention to the latest ICAO regulations and recommendations, and plan the next generation aeronautical information service system to ensure the quality and safety of flight information services in Taipei FIR.
- » Coordinate proactively with neighboring air traffic control centers to effectively control traffic flow, thereby reducing air congestion and delays in the Taipei FIR.
- » Expand the human resources network on international air traffic service organizations, and enhance the visibility of Taiwan's international air traffic service organizations and aviation industry.

- » 關注最新國際民航組織規範及建議作法，規劃下一代航空情報服務系統，確保本區飛航情報服務作業品質與安全。
- » 積極與鄰區區域管制中心合作，研商有效率之流量管理措施，減低空中擁擠及等待。
- » 拓展國際飛航服務組織之人脈資源網絡，提升我國於國際飛航服務組織及航空業界之能見度。







## 大事紀要 2018 In Review 07

專業領航，鋪展榮耀地圖  
Navigating professionally to shape bright futures



### 1 月 JANUARY



» 01/02

推出「天際的守護者—飛航管制」主題策展網站。  
Hosted "Guardian of the sky -Air Traffic Control" curation.



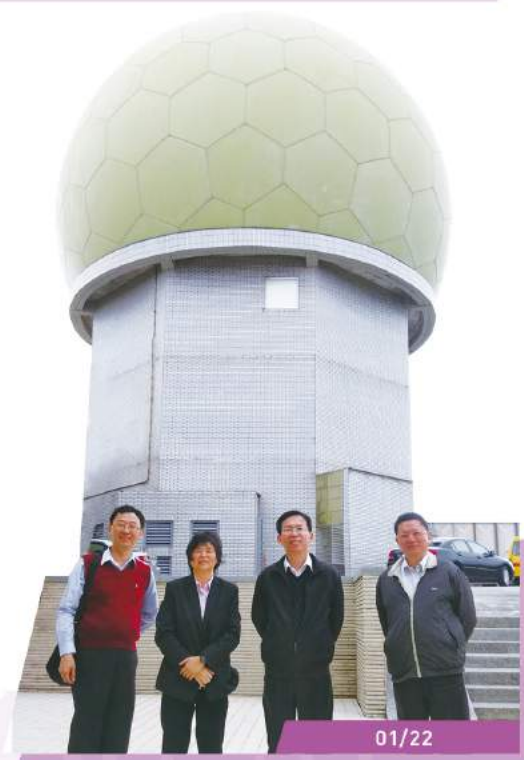
» 01/12

啟用臺東豐年機場 22 跑道頭進場燈。  
The Approach Lighting System of Runway 22 in Taitung Fongnian Airport has been launched.



» 01/22

林局長國顯在黃總臺長麗君陪同下，視察恆春地區飛航服務及各項助導航設施運作情形。  
Director General of CAA, Lin, Kuo-shian accompanied by ANWS Director, Huang, Li-chun visited Hengchun area to understand air traffic services and navigation maintenance situations.



01/22



» 01/26

林局長國顯視察金門地區飛航服務運作情形及終端雷達興建工程進度。  
Director General of CAA, Lin, Kuo-shian visited Kinmen area to understand air traffic services and construction of terminal radar.



» 01/29

方副局長志文視察馬祖地區並致贈春節慰問金。  
Deputy Director General of CAA, Fang, Chih-wen visited Matsu area and distributed Chinese New Year subsidies.  
汰換嘉義機場 36 跑道 ILS/DME 設備。  
The ILS/DME of Runway 36 in Chiayi Airport has been replaced.



01/26



01/29



### 2 月 FEBRUARY



» 02/08

何副局長淑萍視察南部飛航服務園區並致贈春節慰問金。  
Deputy Director General of CAA, Ho, Shu-ping visited South ATS Park and distributed Chinese New Year subsidies.



» 02/09

交通部范政務次長植谷在方副局長志文、林組長宏憲及范處長孝倫陪同下視察北部飛航服務園區並致贈春節慰問金。(圖右)  
Political Deputy Minister of MOTC, Fan, Chih-Ku accompanied by Deputy Director General of CAA, Fang, Chih-wen, Aerodrome Engineering Division Director, Lin, Hung-hsien, Director of ATI, Fan, Hsiao-lun visited North ATS Park and distributed Chinese New Year subsidies. (right image)

何副局長淑萍在黃總臺長麗君陪同下，視察大屯山地區並致贈春節慰問金。  
Deputy Director General of CAA, Ho, Shu-ping accompanied by ANWS Director, Huang, Li-chun visited Datunshan area and distributed Chinese New Year subsidies.



02/08



02/09 (圖右)



02/13

何副局長淑萍及方副局長志文分別前往北部飛航服務園區、桃園及臺南地區視察並致贈春節慰問金。(圖左及圖右)

Deputy Director General of CAA, Ho, Shu-ping and Fang, Chih-wen respectively visited North ATS Part, Taoyuan and Tainan area and distributed Chinese New Year subsidies. [left image and right image]

林局長國顯在黃總臺長麗君陪同下，視察三貂角雷達臺並致贈春節慰問金。

Director General of CAA, Lin, Kuo-shian accompanied by ANWS Director, Huang, Li-chun visited Sandiaojiang Radar Site and distributed Chinese New Year subsidies.



02/13 (圖左)

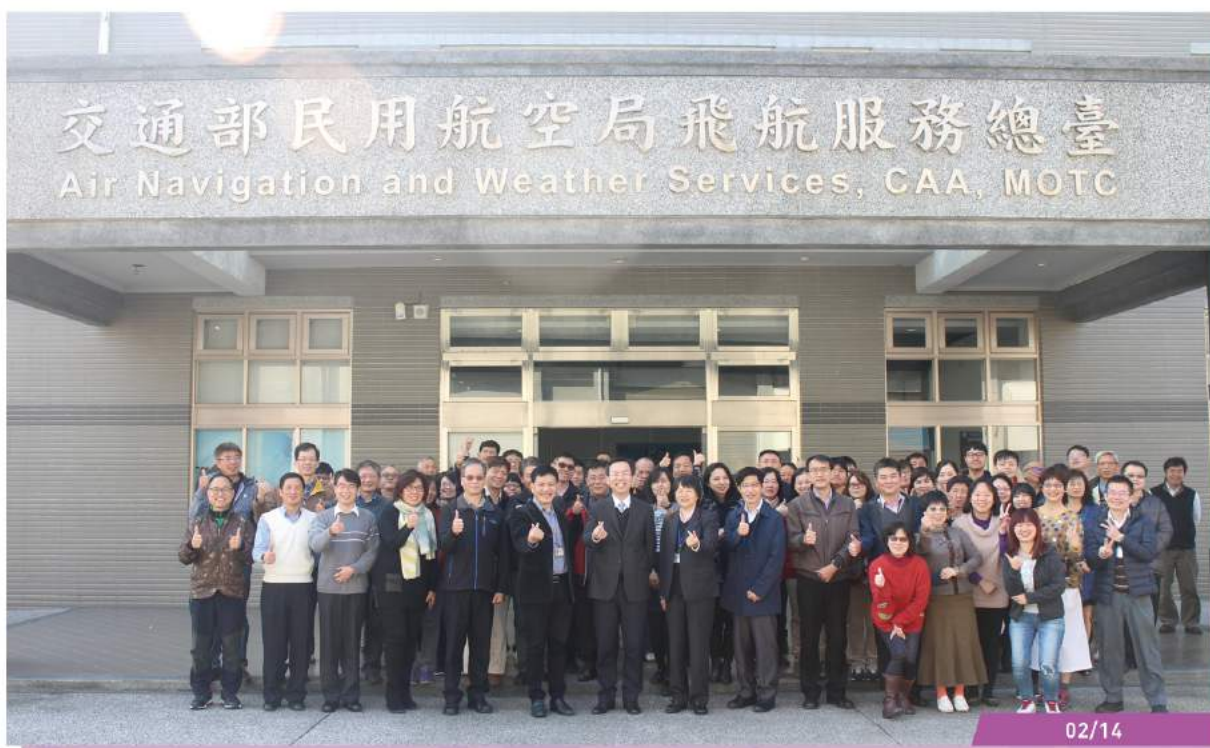


02/13 (圖右)

02/14

林局長國顯在黃總臺長麗君陪同下，視察總臺濱江地區並致贈春節慰問金。

Director General of CAA, Lin, Kuo-shian accompanied by ANWS Director, Huang, Li-chun visited ANWS Binjiang area and distributed Chinese New Year subsidies.



02/14

02/19

交通部范政務次長植谷在桃園機場公司李副總經理建國及蔡副總臺長宗穎陪同下視察桃園地區並致贈春節慰問金。

Political Deputy Minister of MOTC, Fan, Chih-Ku accompanied by Senior Vice President of Taoyuan International Airport Corporation Ltd, Charles, C.K. Lee and ANWS Deputy Director, Tsai, Tsung-ying visited Taoyuan area and distributed Chinese New Year subsidies.

02/23

舉辦總臺 107 年度慶生會。

The 2018 Birthday Celebration were held in ANWS Binjiang area.



02/19



02/23



3 月 MARCH

03/01

啓用航管席位輔助資訊顯示系統 (Supplementary Information System)。

Supplementary Information System has been launched.

03/09、16

辦理北部及南部「107 年度春節聯誼會」，共計 166 人參加。

Held the 2018 northern and southern area annual Lunar New Year banquet, there are total 166 retiree seniors presented.

03/26

啓用金門終端航管雷達。

The New Kinmen Terminal Radar has been launched.



03/01



03/09





## 4 月 APRIL



» 04/11

交通部「107 年上半年度交通部重要業務交流活動」(第 1 梯次)，由人事處李副處長玉惠率隊一行 36 人參訪北部飛航服務園區，瞭解各類飛航服務作業情形。

Deputy Director of Department of Personnel, MOTC, Li, Yu-hui led 35 staffs to visit North ATS Park for "2018 important business exchange activities (1st batch)" to understand air traffic services operation.



04/11



» 04/19

交通部「107 年上半年度交通部重要業務交流活動」(第 2 梯次)，由人事處蔡處長英良率隊一行 37 人參訪北部飛航服務園區，瞭解各類飛航服務作業情形。

Director of Department of Personnel, MOTC, Cai, Ying-liang led 36 staffs to visit North ATS Park for "2018 important business exchange activities (2nd batch)" to understand air traffic services operation.



04/19



04/19



» 04/26

提升高雄 27 跑道 LDA 為 ILS 設備，提供高雄機場 27 跑道精確進場服務，航機降落之能見度標準可由原來 2,700 公尺降低至 1,400 公尺。

Upgraded LDA to ILS equipment in Kaohsiung International Airport, providing precision approach service for Runway 27. The minimum visibility required for landing was reduced from 2,700M to 1,400M.



04/26



## 5 月 MAY



» 05/24

因應日本與韓國提出建置 B576 平行航路，啓用 L4 RNAV 新航路，往日韓可縮短航程、節能減碳、減少航機交匯，提升飛航安全。

In response to Japan and Korea proposing the establishment of a parallel route B576, the initiation of new route L4 RNAV decreased air traffic congestion and improved flight safety, route efficiency and carbon emission rates.



» 05/25

完成嘉義機場 18 跑道儀器降落系統 (ILS) 汰換，提高設備妥善率與可靠度，提升整體飛航安全與飛航服務品質。

The ILS of Runway 18 in Chiayi Airport has been replaced, improving the availability and reliability of equipment, and increasing aviation service and flight safety.



## 6 月 JUNE



» 06/01

與福岡飛航情報區啓用 TOC/AOC 雷達自動交接功能，透過自動化功能代替原人工程序，減少原口頭雷達交接程序所需之協調工作量及時間，增進雙方飛航服務效率及提升飛航安全。

The automatic radar handoff function (TOC/AOC, Transfer of Control/Assumption of Control) between the Fukuoka and Taipei FIR was activated. Through automatic radar handoff function, it will significantly reduce the workload and time of the coordination required for the original oral radar handoff procedure. The cooperation between the air traffic control services of the two parties will be smoother and the aviation safety will be improved.



06/01



» 06/07-13

林副總臺長嘉明率本總臺相關人員赴泰國曼谷參與 CANSO 亞太區年會暨工作小組會議，並於會議上分享本總臺 106 年辦理安全文化問卷調查之結果與收穫，另也在會議上表達參與 Multi-Nodal ATFM 及 SWIM 專案的意願。

3 representatives from ANWS attended "CANSO Asia Pacific Conference and APAC Safety and Operation Workgroups" meetings was held in Bangkok, Thailand. ANWS shared the outcome of "2017 Safety Culture Survey" and expressed the willingness to participate in the regional projects, such as Multi-Nodal ATFM and SWIM.





## 7 月 JULY



» 07/02

方副局長志文在林副總臺長嘉明及施工團隊陪同下，視察桃園機場塔臺園區新建工程及關切施工狀況。

Deputy Director General of CAA, Fang, Chih-wen, accompanied by ANWS Deputy Director, Lin, Chia-ming and construction team inspected the construction of Taoyuan Airport New Air Traffic Control Tower.



07/02



» 07/14

於北部飛航服務園區辦理 107 年北部地區親子日活動，共計 238 人參加。

Hosted 2018 northern area Family Day in North ATS Park, with a total of 238 participants.



07/14



» 07/17

啓用花蓮機場 03 跑道進場燈，提高跑道頭識別度，確保航機操作安全。

The Approach Lighting System of Runway 03 in Hualien Airport has been launched. The lights benefit runway threshold identification for aircraft landing, ensuring the operational safety of aircraft.



» 07/20

行政院人事行政總處施人事長能傑一行 8 人，在交通部及民航局各級主管陪同下，參訪北部飛航服務園區，瞭解各類飛航服務作業情形。

Minister of Directorate-General of Personnel Administration, Executive Yuan, Jay N. Shih accompanied by representatives from MOTC and CAA led 7 staffs to visit North ATS Park to understand air traffic services operation.



07/20



» 07/28

於南部飛航服務園區辦理 107 年南部地區親子日活動，共計 119 人參加。

Hosted 2018 southern area Family Day in South ATS Park, with a total of 119 participants.



07/28



## 8 月 AUGUST



» 08/15

交通部張政務次長政源在民航局何副局長淑萍、薛組長少怡及黃總臺長麗君陪同下，視察北部飛航服務園區並聽取總臺重要業務說明。

Political Deputy Minister of MOTC, Chang, Chen-yuan accompanied by Deputy Director General of CAA, Ho, Shu-ping, Air Traffic Services Division Director Shiue, Shao-yi and Director of ANWS, Huang, Li-chun visited North ATS Park to understand air traffic services.



08/15



» 08/21

航空氣象服務網新增「直昇機專區」，提供直昇機飛行任務所需航空氣象資料，提升航空氣象服務品質。

"Helicopter Area" service has been available on Aeronautical Meteorological Service Page to provide a more comprehensive aeronautical meteorological service system and more detailed information for helicopter missions.



» 08/28

民航局企劃組陳組長昭諭一行 8 人至本總臺進行 107 年度為民服務績效實地評鑑。

CAA Planning Division Director, Chen, Jau-yuh led 7 staffs to visit ANWS for 2018 Citizen-Service Assessment.



» 08/31

經濟部中小企業處政風室主任呂叔璋調任總臺政風室主任。

MOEA Department of Small and Medium Enterprise Administration Civil Service Ethics Office Chief, Lu, Shu-wei was succeeded to ANWS Civil Service Ethics Office Chief.





## 9 月 SEPTEMBER



09/01

舉辦北部地區 49 週年臺慶活動「石門水庫大溪一日遊」。  
"Shihmen Reservoir and Daxi trip" was held in northern area to celebrate the 49th anniversary of ANWS.



09/01



09/03

航空氣象收發報系統正式上線啓用，提高航空氣象電報發布效率及正確性，提升臺北飛航情報區航空氣象服務品質。  
The Aviation Weather Report Transmitting and Receiving System has been launched. The new system provides even more immediate and accurate aeronautical meteorological forecast telegraphs, and therefore improve the service quality of aeronautical meteorological services in Taipei FIR.



09/04

資訊管理中心主任汪美惠陞任副總臺長。  
Information Management Center Chief, Wang, Mei-hui was promoted to ANWS Deputy Director.



09/08

舉辦南部地區 49 週年臺慶活動「舟遊嘉南樂活趣」。  
"Tainan and Chiayi trip" was held in southern area to celebrate the 49th anniversary of ANWS.



09/08



09/08



09/10

民航局林局長國顯視察本總臺嘉義助航臺瞭解相關工作情形，並慰勉同仁辛勞。  
Director General of CAA, Lin, Kuo-shian visited Chiayi Navids Site to understand their daily operations.



09/10



## 10 月 OCTOBER



10/04

中華電信北區營業處一行 10 人（含外賓馬紹爾電信公司）參訪大屯山助航臺，針對通信機房內中華電信光纖設備進行業務交流。  
A group of 10 from Chunghwa Telecom North District Office (including Marshall Telecom) visited Datunshan Navids Site to learn about Chunghwa Telecom's optical equipment of communication room.



10/04



10/11

資訊管理中心副主任李淑芬陞任該中心主任。  
Information Management Center Deputy Chief, Lee, Shu-fen was promoted to the Center Chief.



10/19

榮獲民航局 107 年公文績效檢核第 3 名。  
ANWS received the third place honor of "Evaluation of Document Performance" from CAA.



10/19





» 10/21

舉辦總臺盃第四屆慢速壘球錦標賽，共計 106 人參加。  
Hosted 2018 the forth ANWS Cup Slow Pitch Softball Tournament, with a total of 106 participants.



10/21



» 10/25

榮獲民航局 107 年為民服務績效定期評鑑第 1 名。  
ANWS received the first place honor of "Regular Evaluation of Service Performance" from CAA.



11 月 NOVEMBER



» 11/13

邀請國立臺灣科技大學特聘教授，現任飛航安全調查委員會副主任委員紀佳芬博士講授「飛航服務之人為因素探討」，強化「人為因素」於安全管理之運用及對飛航服務作業之影響。  
ANWS invited Dr. Chia-Fen Chi, a distinguished professor at NTUST and current Vice Chairman of Aviation Safety Council, to give a lecture on "An Introduction to Human Factors in Air Traffic Services." Through the talk, everyone is more aware of the impact of human factors in air traffic services and learns how to develop and implement human factors tools to improve SMS.



11/13



» 11/17

本總臺與中華航空氣象協會共同舉辦桌球聯誼賽，共約 94 人參加。  
ANWS and Chinese Aeronautical Meteorological Association held Table Tennis contest, with an estimated 94 participants.



11/17



11/17



» 11/23

行政院國土安全辦公室黃主任俊泰率 11 位訪評委員，至本總臺北飛航服務園區進行 107 年度國家關鍵基礎設施防護演習訪評作業。  
Director of Office of Homeland Security of Executive Yuan, Huang, Jun-tai led 11 staffs to visit North ATS Park for 2018 Critical Infrastructure Protection (CIP) Assessment.



11/23



12 月 December



» 12/04

榮獲民航局所屬各機關行政績效考核第 1 名。  
ANWS received the first place honor of "Annual Performance Evaluation of Agencies" from CAA.



» 12/10

臺北飛航情報中心林副主任慧珠陞任該中心主任。  
Taipei Flight Information Center Deputy Chief, Lin, Hui-chu was promoted to the Center Chief.



» 12/12

增設松山機場 10 跑道 B 型警戒燈，降低跑道入侵風險。  
Configuration B runway guard lights of Runway 10 in Taipei Songshan Airport has been launched to help prevent runway incursions.







## 附錄 Appendix

創新蛻變，厚實飛航安全  
Ensuring aviation safety by innovation

08

### 一、助航裝備 Navigation Equipment

名稱 Name	數量 Number	設置地點 Location
歸航臺 (NDB) Non-Directional Beacon(NDB)	10 套 10 sets	大屯山、金門、南竿、後龍、恆春、臺南西港、馬公、花蓮、綠島及蘭嶼等處 Mt. Datun, Kinmen, Nangan, Houlong, Hengchun, Tainan Xigang, Magong, Hualien, Ludao and Lanyu
定位臺 (LOCATOR) LOCATOR	10 套 10 sets	高雄、臺北 (2 套)、花蓮、臺東知本 (2 套)、清泉崗、恆春、北竿及嘉義等處 Kaohsiung, Taipei (2 sets), Hualien, Taitung Zhiben (2 sets), Cingcyuangang, Hengchun, Beigan and Chiayi
特高頻多向導航臺 (VOR) VHE Omni-directional Range(VOR)	8 套 8 sets	臺北松山機場、大屯山、臺南西港、恆春、花蓮、馬公、後龍及綠島等處 Taipei Songshan Airport, Mt. Datun, Tainan Xigang, Hengchun, Hualien, Magong, Houlong and Ludao
測距儀 (DME) Distance Measuring Equipment(DME)	38 套 38 sets	臺灣桃園國際機場 (4 套)、高雄國際機場 (2 套)、臺北松山機場 (3 套)、臺中清泉崗 (3 套)、臺南 (2 套)、澎湖 (3 套)、嘉義水上 (2 套)、花蓮 (4 套)、臺東豐年 (2 套)、金門尚義 (2 套)、北竿 (2 套)、南竿 (2 套)、恆春等機場及大屯山、臺南西港 (2 套)、恆春、知本、綠島、蘭嶼等處 Taiwan Taoyuan Int'l Airport (4 sets), Kaohsiung Int'l Airport (2 sets), Taipei Songshan (3 sets) / Taichung Cingcyuangang (3 sets) / Tainan (2 sets) / Penghu (3 sets) / Chiayi Shuishang (2 sets) / Hualien (4 sets) / Taitung Fongnian (2 sets) / Kinmen Shangyi (2 sets) / Beigan (2 sets) / Nangan (2 sets) / Hengchun Airport and Mt. Datun, Tainan Xigang (2 sets), Taitung Zhiben, Ludao, Lanyu

名稱 Name	數量 Number	設置地點 Location
儀器降落系統 (ILS) (含 GP 及 LOC) Instrument Landing System(ILS) (including GP and LOC)	17 套 17 sets	臺灣桃園國際機場 (4 套)、高雄國際機場 (2 套)、臺北松山、臺中清泉崗 (2 套)、臺南 (2 套)、澎湖 (2 套)、嘉義水上 (2 套)、金門尚義及花蓮等機場 Taiwan Taoyuan Int'l Airport(4 sets), Kaohsiung Int'l Airport (2 sets) and Taipei Songshan / Taichung Cingcyuangang (2 sets) / Tainan (2 sets) / Penghu (2 sets) / Chiayi Shuishang (2 sets) / Kinmen Shangyi / Hualien Airport
左右定位輔助臺 (LDA) Localizer-type Directional Aid (LDA)	7 套 7 sets	臺北松山、花蓮、金門尚義、臺東、北竿 (2 套) 及南竿等機場 Taipei Songshan / Hualien / Kinmen Shangyi / Taitung Fongnian / Beigan (2 sets) / Nangan Airport

### 二、助航燈光裝備 Navigation Aid Lighting Equipment

種類 Facilities	設置地點 Location
跑道邊燈、跑道頭 / 末端燈、滑行道中心線燈、滑行道邊燈、進場燈 (SSALR-10)、跑道頭識別燈 (REIL-28)、精確進場滑降指示燈 (PAPI)、跑道警戒燈、指示牌、千呎牌 Runway edge lights, Runway threshold/end lights, Taxiway centre line lights, Taxiway edge lights, Approach lighting systems(SSALR-10), Runway threshold identification lights(REIL-28), Precision approach path indicator(PAPI), Runway guard lights, Signs, Runway distance remaining sign	臺北松山機場 Taipei Songshan Airport
跑道邊燈、跑道頭 / 末端燈、跑道中心線燈、著陸區燈、滑行道邊燈、滑行道中心線燈、進場燈 (CAT II APCH)、精確進場滑降指示燈 (PAPI)、跑道警戒燈、停止線燈、指示牌、千呎牌 (全部由桃園國際機場公司維護) Runway edge lights, Runway threshold/end lights, Runway centre line lights, Runway touchdown zone lights, Taxiway edge lights, Taxiway centre line lights, Approach lighting systems (CAT II APCH), Precision approach path indicator (PAPI), Runway guard lights, Stop bars, Signs, Runway distance remaining sign [all maintained by Taiwan Taoyuan Airport Corporation]	臺灣桃園國際機場 Taiwan Taoyuan International Airport
跑道邊燈、跑道頭 / 末端燈、跑道中心線燈、滑行道邊燈、進場燈 (MALSR-09)、著陸區燈 (09)、跑道頭識別燈 (REIL-27)、精確進場滑降指示燈 (PAPI)、跑道警戒燈、指示牌、千呎牌 Runway edge lights, Runway threshold/end lights, Runway centre line lights, Taxiway edge lights, Approach lighting systems (MALSR 09), Runway touchdown zone lights (09), Runway threshold identification lights (REIL-27), Precision approach path indicator (PAPI), Runway guard lights, Signs, Runway distance remaining sign	高雄國際機場 Kaohsiung International Airport
跑道邊燈、跑道頭 / 末端燈、滑行道邊燈、進場燈 (MALSF-21、ALS-03)、跑道頭識別燈 (REIL-03)、精確進場滑降指示燈 (PAPI)、跑道警戒燈、指示牌、千呎牌 (部分由軍方維護) Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (MALSF-21、ALS-03), Runway threshold identification lights (REIL-03), Precision approach path indicator (PAPI), Runway guard lights, Signs, Runway distance remaining sign (partially maintained by the Military)	花蓮機場 Hualien Airport
跑道邊燈、跑道頭 / 末端燈、滑行道邊燈、進場燈 (MALSR-02、SALS-20)、精確進場滑降指示燈 (PAPI)、跑道警戒燈、指示牌、千呎牌 Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (MALSR-02、SALS-20), Precision approach path indicator (PAPI), Runway guard lights, Signs, Runway distance remaining sign	澎湖機場 Penghu Airport
跑道邊燈、跑道頭 / 末端燈、滑行道邊燈、進場燈 (MALSR-36R、MALSF-18L)、精確進場滑降指示燈 (PAPI-18L/36R)、跑道警戒燈、指示牌、千呎牌 (全部由軍方維護) Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (MALSR-36R, MALSF-18L), Precision approach path indicator (PAPI-18L/36R), Runway guard lights, Signs, Runway distance remaining sign [all maintained by the Military]	臺南機場 Tainan Airport





種類 Facilities	設置地點 Location
跑道邊燈、跑道頭/末端燈、滑行道邊燈、進場燈 (MALSR-04、ALS-22)、跑道頭識別燈 (REIL-22)、精確進場滑降指示燈 (PAPI)、跑道警戒燈、指示牌、千呎牌 Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (MALSR-04、ALS-22), Runway threshold identification lights (REIL-22), Precision approach path indicator (PAPI), Runway guard lights, Signs, Runway distance remaining sign	臺東豐年機場 Taitung Fongnian Airport
跑道邊燈、跑道頭/末端燈、滑行道邊燈、進場燈 (ALS-36)、跑道頭識別燈 (REIL-18)、精確進場滑降指示燈 (PAPI)、跑道警戒燈、指示牌、千呎牌 (除 W (含 W1-W5) 滑行道邊燈、指示牌由本總臺維護外,其餘由軍方維護) Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (ALS-36), Runway threshold identification lights (REIL-18), Precision approach path indicator (PAPI), Runway guard lights, Signs, Runway distance remaining sign (apart from the Taxiway edge lights and Signs, the remainder are maintained by the Military)	臺中清泉崗機場 Taichung Cingcyuangang Airport
跑道邊燈、跑道頭/末端燈、滑行道邊燈、進場燈 (SSALR-06、MALSF-24)、精確進場滑降指示燈 (PAPI-06)、跑道警戒燈、指示牌、千呎牌 Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (SSALR-06, MALSF-24), Precision approach path indicator (PAPI-06), Runway guard lights, Signs, Runway distance remaining sign	金門尚義機場 Kinmen Shangyi Airport
跑道邊燈、跑道頭/末端燈、滑行道邊燈、進場燈 (MALSR-36、ALS-18)、精確進場滑降指示燈 (PAPI)、千呎牌 (全部由軍方維護) Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (MALSR-36, ALS-18), Precision approach path indicator (PAPI), Runway distance remaining sign (all maintained by the Military)	嘉義水上機場 Chiayi Shuishang Airport
跑道邊燈、跑道頭/末端燈、跑道頭識別燈 (REIL)、簡式精確進場滑降指示燈 (APAPI)、千呎牌 Runway edge lights, Runway threshold/end lights, Runway threshold identification lights (REIL), Abbreviated precision approach path indicator (APAPI), Runway distance remaining sign	七美機場 Qimei Airport
跑道邊燈、跑道頭/末端燈、跑道頭識別燈 (REIL)、簡式精確進場滑降指示燈 (APAPI)、千呎牌 Runway edge lights, Runway threshold/end lights, Runway threshold identification lights (REIL), Abbreviated precision approach path indicator (APAPI), Runway distance remaining sign	望安機場 Wangan Airport
跑道邊燈、跑道頭/末端燈、滑行道邊燈、跑道頭識別燈 (REIL)、簡式精確進場滑降指示燈 (APAPI)、指示牌、千呎牌 Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Runway threshold identification lights (REIL), Abbreviated precision approach path indicator (APAPI), Signs, Runway distance remaining sign	北竿機場 Beigan Airport
跑道邊燈、跑道頭/末端燈、滑行道邊燈、簡式著陸區燈、跑道頭識別燈 (REIL)、簡式精確進場滑降指示燈 (APAPI)、指示牌、千呎牌 Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Simple touchdown zone lights, Runway threshold identification lights (REIL), Abbreviated precision approach path indicator (APAPI), Signs, Runway distance remaining sign	南竿機場 Nangan Airport
跑道頭/末端燈、滑行道邊燈、跑道頭識別燈 (REIL)、精確進場滑降指示燈 (PAPI)、指示牌、千呎牌 Runway threshold/end lights, Taxiway edge lights, Runway threshold identification lights (REIL), Precision approach path indicator (PAPI), Signs, Runway distance remaining sign	恆春機場 Hengchun Airport
簡式精確進場滑降指示燈 (APAPI) Abbreviated precision approach path indicator (APAPI)	綠島機場 Ludao Airport
簡式精確進場滑降指示燈 (APAPI) Abbreviated precision approach path indicator (APAPI)	蘭嶼機場 Lanyu Airport

備註：底線標示者為 107 年新增項目。

Note: The update status of 2018 is emphasized with underline.

### 三、雷達及監視裝備 Radar and Surveillance Equipment

名稱 Name	數量 Number	設置地點 Location
航路雷達 En-route Radar	2 套 2 sets	三貂角與鵝鑾鼻 Sandiaojiao and Eluanbi Radar Sites
終端雷達 Terminal Radar	9 套 9 sets	臺灣桃園國際機場 (2 套)、高雄國際機場、臺北松山、臺中清泉崗、臺東豐年、澎湖、花蓮及金門尚義等機場 Taiwan Taoyuan Int'l Airport (2 sets), Kaohsiung Int'l Airport and Taipei Songshan / Taichung Cingcyuangang / Taitung Fongnian / Penghu / Hualien / Kinmen Shangyi Airport
都卜勒氣象雷達 Doppler Weather Radar	1 套 1 set	臺灣桃園國際機場 Taiwan Taoyuan Int'l Airport
場面搜索雷達 (SMR) Surface Movement Radar (SMR)	1 套 1 set	臺灣桃園國際機場 Taiwan Taoyuan Int'l Airport
多點定位系統 (MLAT) Multilateration (MLAT)	1 套 1 set	臺灣桃園國際機場 Taiwan Taoyuan Int'l Airport
廣播式自動回報監視 (ADS-B) 裝備 Automatic Dependent Surveillance-Broadcast (ADS-B)	10 套 10 sets	臺中清泉崗、金門尚義、臺東豐年、花蓮、南竿、澎湖等機場及大屯山、高雄壽山、三貂角、金門北側 (太武山和金沙) Taichung Cingcyuangang / Kinmen Shangyi / Taitung Fongnian / Hualien / Nangan / Penghu Airport and Mt. Datun, Kaohsiung Shoushan, Sandiaojiao, Northern Kinmen (Mt. Taiwu and Jinsha)

### 四、通信裝備 Communication Equipment

名稱 Name	數量 Number	設置地點 Location
陸空通信收發訊臺 (HF) High Frequency Tower (HF)	7 臺 7 sets	北部飛航服務園區 (4 臺)、臺灣桃園國際機場 (3 臺) North ATS Park (4 sets), Taoyuan International Airport (3 sets)
陸空通信收發訊機特高頻 / 超高頻 (VHF/UHF) Very and Ultra High Frequency Tower (VHF/UHF)	781 臺 781 sets	臺灣桃園國際機場 (98 臺)、高雄國際機場 (93 臺)、臺北松山 (35 臺)、金門尚義 (10 臺)、北竿 (35 臺)、南竿 (26 臺)、臺中清泉崗 (59 臺)、澎湖 (125 臺)、望安 (2 臺)、七美 (2 臺)、嘉義水上 (14 臺)、臺南 (6 臺)、臺東豐年 (75 臺)、花蓮 (27 臺)、綠島 (27 臺)、蘭嶼 (16 臺) 等機場及大屯山 (74 臺)、三貂角 (32 臺)、恆春 (25 臺) 等處 Taiwan Taoyuan Int'l Airport (98 sets), Kaohsiung Int'l Airport (93 sets), Taipei Songshan (35 sets), Kinmen Shangyi (10 sets), Beigan (35 sets), Nangan (26 sets), Taichung Cingcyuangang (59 sets), Penghu (125 sets), Wangan (2 sets), Qimei (2 sets), Chiayi Shuishang (14 sets), Tainan (6 sets), Taitung Fongnian (75 sets), Hualien (27 sets), Ludao (27 sets), Lanyu (16 sets), Airport and Mt. Datun (74 sets), Sandiaojiao (32 sets), Hengchun (25 sets)
數位語音交換系統 (DVCSS) Digital Voice Communication Switch System (DVCSS)	11 套 11 sets	北部與南部飛航服務園區及臺灣桃園國際機場、臺北松山、北竿、南竿、金門、高雄、澎湖、恆春、臺東豐年等機場 North and South ATS Parks, Taiwan Taoyuan Int'l Airport and Taipei Songshan / Beigan / Nangan / Kinmen / Kaohsiung / Penghu / Hengchun / Taitung Fongnian Airport Control Tower
微波系統 Microwave System	10 套 10 sets	臺灣桃園國際機場、高雄國際機場、臺北松山、澎湖等機場及北部飛航服務園區、大屯山 (3 套)、大棟山、高雄壽山等處 Taiwan Taoyuan Int'l Airport, Kaohsiung Int'l Airport, and Taipei Songshan / Penghu Airport, North ATS Park, Mt. Datun (3 sets), Mt. Dadong, Kaohsiung Shoushan
錄音系統 Recording System	15 組 15 sets	北部與南部飛航服務園區、臺灣桃園國際機場、臺北松山、北竿、南竿、金門、澎湖、七美、望安、臺東豐年、高雄、恆春、綠島、蘭嶼等機場 North and South ATS Parks, Taiwan Taoyuan Int'l Airport and Taipei Songshan / Beigan / Nangan / Kinmen / Penghu / Qimei / Wangan / Taitung Fongnian / Kaohsiung / Hengchun / Ludao / Lanyu Airport Control Tower





## 五、氣象裝備 Meteorological Equipment

名稱 Name	數量 Number	設置地點 Location
自動氣象觀測系統 (AWOS) Automatic Weather Observation System(AWOS)	25 套 25 sets	臺灣桃園國際機場、高雄國際機場、臺北松山、北竿、南竿、金門尚義、恆春、七美、望安、臺東豐年、綠島及蘭嶼等機場 Taiwan Taoyuan Int'l Airport, Kaohsiung Int'l Airport and Taipei Songshan / Beigan / Nangan / Kinmen Shangyi / Hengchun / Qimei / Wangan / Taitung Fongnian / Ludao / Lanyu Airport
低空風切警報系統 (LLWAS) Low Level Windshear Alert System(LLWAS)	2 套 2 sets	臺灣桃園國際機場、臺北松山機場 Taiwan Taoyuan Int'l Airport, Taipei Songshan Airport
航空氣象現代化作業系統 (AOAWS) Advanced Operational Aviation Weather System(AOAWS)	1 套 1 set	臺北航空氣象中心 Taipei Aeronautical Meteorological Center
多元產品顯示系統 (MDS、JMDS) Multi-dimensional Display System, Java-Based Multidimensional Display System (MDS, JMDS)	11 套 11 sets	臺北航空氣象中心及松山、桃園、高雄等航空氣象臺、臺北區域管制中心、臺北與桃園飛航諮詢臺 Taipei Aeronautical Meteorological Center, Songshan / Taoyuan / Kaohsiung Weather Station, Taipei Area Control Center, Taipei / Taoyuan Flight Information Station

## 六、航管自動化系統 Air Traffic Control Automation System

名稱 Name	數量 Number	設置地點 Location
飛航管理系統 (ATMS) Air Traffic Management System(ATMS)	2 套 2 sets	北部與南部飛航服務園區 11 個塔臺管制席位：臺北、高雄、松山、豐年、恆春、馬公、金門、北竿、南竿、綠島及蘭嶼等機場管制臺 North and South ATS Parks Controller Working Position in 11 airport control towers: Taipei, Kaohsiung, Songshan, Fongnian, Hengchun, Magong, Kinmen, Beigan, Nangan, Ludao and Lanyu
獨立備份航管系統 (IBAS) Independent Backup ATC System(IBAS)	2 套 2 sets	北部與南部飛航服務園區 North and South ATS Parks

## 七、其他飛航服務系統 Other Aviation Service Systems

名稱 Name	數量 Number	設置地點 Location
飛航訊息處理系統 (AMHS) Air Traffic Services (ATS) Message Handling System(AMHS)	3 套 3 sets	北部飛航服務園區 2 套與南部飛航服務園區 1 套 工作站：飛航服務總臺所屬各飛航服務作業單位、各航空站、航空公司、軍方及相關政府單位 North ATS Park (2 sets) and South ATS Park Working Position: ATS units of ANWS, airports, airlines, Military and related government units
航空情報服務系統 (AISS) Aeronautical Information Service System(AISS)	2 套 2 sets	北部與南部飛航服務園區 工作站：臺北、桃園及高雄等飛航諮詢臺 North and South ATS Parks Working Position: Taipei, Taoyuan and Kaohsiung Flight Information Station
語音及資料鏈路航路氣象自動廣播系統 (V/D-VOLMET) Voice/Datalink meteorological information for aircraft in flight(V/D-VOLMET) System	1 套 1 set	北部飛航服務園區 North ATS Park
數據(含語音)終端資訊自動廣播服務系統 (D-ATIS) Voice/Datalink Automatic Terminal Information Service System(D-ATIS)	4 套 4 sets	臺北、松山、臺中清泉崗及高雄機場管制臺 Taipei, Songshan, Taichung Cingcyuangang and Kaohsiung Airport Control Tower
語音終端資訊自動廣播服務系統 (ATIS) Voice Automatic Terminal Information Service System(ATIS)	5 套 5 sets	豐年、馬公、金門、南竿及北竿機場管制臺 Fongnian, Magong, Kinmen, Nangan and Beigan Airport Control Tower



# 飛航服務總臺107年年報

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