

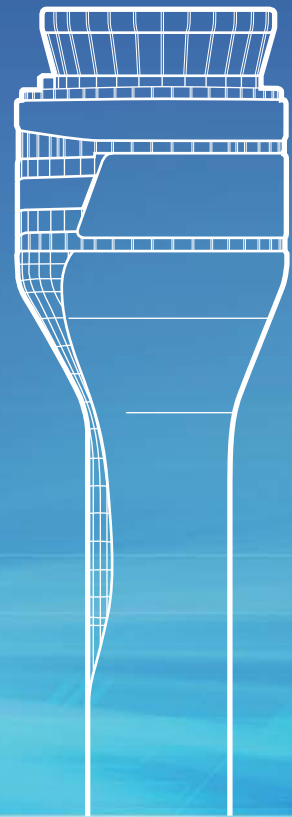


# 2019

ANNUAL REPORT 一〇八年年報

交通部 飛航服務總臺  
民用航空局

AIR NAVIGATION AND WEATHER SERVICES, CAA, MOTC



# ANWS



安全、創新、效率  
Safety · Innovation · Efficiency

每一道光，彷彿東昇的日照  
建構出屬於總臺的美學  
是創新的語彙，美麗而洗鍊

飛航服務總臺，50 年來  
肩負確保飛航安全的使命  
守護每一架飛機起降，翱翔無限天際  
持續服務為飛安守望 無限領航

Like the sun rising from the east, every ray of light  
carves out Air Navigation and Weather Services (ANWS)'  
distinct aesthetic that shines of innovation- beautiful and polished.

For nearly half a century, the ANWS  
has embraced flight safety as its primary mission,  
watching over each and every aircraft soar into the sky,  
continuing to provide air traffic services as the guardian of flight safety.



# CONTENTS



## 目錄

*Through the path of light, we've gathered talents and elites to achieve first class aviation and excellent air traffic services.*

*Our accomplishments have paved way for a bright indefinite future with major milestones to reach as we continuously pursue our dream.*

### 1

#### 循著飛航之光 Through the Path of Light

總臺長的話—光源 P04  
Words from the Director – Light

### 2

#### 築巢匯聚人才 Gathering Talents and Elites

組織架構—光芒 P08  
Organization – Ray

### 3

#### 優質一流飛航 First Class Aviation

施政成果—光榮 P12  
Major Achievements – Honor

### 4

#### 服務展翼高飛 Excellent Air Traffic Services

服務實績—光耀 P42  
Performance and Statistic – Glory

### 5

#### 航運圓滿達成 Accomplishments

收入支出—光環 P48  
Finances – Aura

### 6

#### 無限閃耀未來 Bright Indefinite Future

未來展望—光綽 P50  
Future Development – Shine

### 7

#### 共享經緯記事 Milestones

大事紀要—光陰 P54  
2019 in Review – Time

### 8

#### 築夢永續航行 Continuously Pursuing Our Dream

附錄—光子 P62  
Appendix – Photon





# 1 總臺長的話— 光源



循著飛航之光  
Through the Path of Light

108年是飛航服務總臺成立50週年，草創迄今，歷經無數淬煉，感謝交通部、民航局、軍方、桃園國際機場公司、各航空站及相關民航業者等各方的鼎力協助，以及所有總臺前輩與同仁的齊心努力，我們精益求精持續締創新高紀錄，108年臺北飛航情報區（以下稱本區）航機總管制架次達185萬、過境管制架次達24.1萬、桃園國際機場起降架次達26.7萬、總臺盈餘逾20.56億元，成績斐然！而在提升區域合作、強化核心業務及精進行政管理等方面也都有亮眼的表現！

在提升區域協同合作方面，繼日本後我們再與香港飛航情報區啟用雷達自動交接管功能、與福岡區域管制中心完成簽署Z401航路備忘錄，提升雙方飛航安全及作業效率；另與馬尼拉飛航情報區啟用飛航服務單位間數據通信（ATS Inter-facility Data Communication, AIDC）功能後，完成與所有鄰區實施AIDC之目標，同時共同虛擬私有網路（Common Regional Virtual Private Network, CRV）也率先與馬尼拉啟用AMHS數據連線及航管語音通訊服務，增進與鄰區間之航管作業效能，並持續參與民用飛航服務組織（Civil Air Navigation Services Organisation, CANSO）會議等相關區域性飛航服務會議，瞭解國際民航發展趨勢。

安全是飛航服務的基石，我們持續深化飛航安全管理，除監控績效指標、落實風險管理、執行作業查核、蒐集維護安全資料外，我們辦理「安全管理溝通管道有效性」問卷調查、改變管理優良案例分享及成果發表等，強化安全溝通與風險管理；另著手規劃建置整合式飛航服務安全管理資訊系統，推動安全資料庫統計分析，以達到主動式及預測式風險管理，提升整體安全服務水準。

服務則是專業適職的展現，我們不斷優化飛航服務品質，辦理強化「航空情報服務網」及「航空氣象服務網」功能，提供使用者更便捷的服務；另啟用新一代飛航訊息處理系統、飛航管理系統擴充備援系統及助航設備服務費收費系統，強化本區飛航服務及應變能力。而在助航服務上，完成汰換7座塔臺航管數位語音交換系統、北區數位微波系統、北竿機場03跑道、臺南機場36R跑道及清泉崗機場18跑道儀降設備、啟用金門機場06跑道ILS以及汰新高雄國際機場進場燈光，確保裝備妥善率，強化航機落地安全。

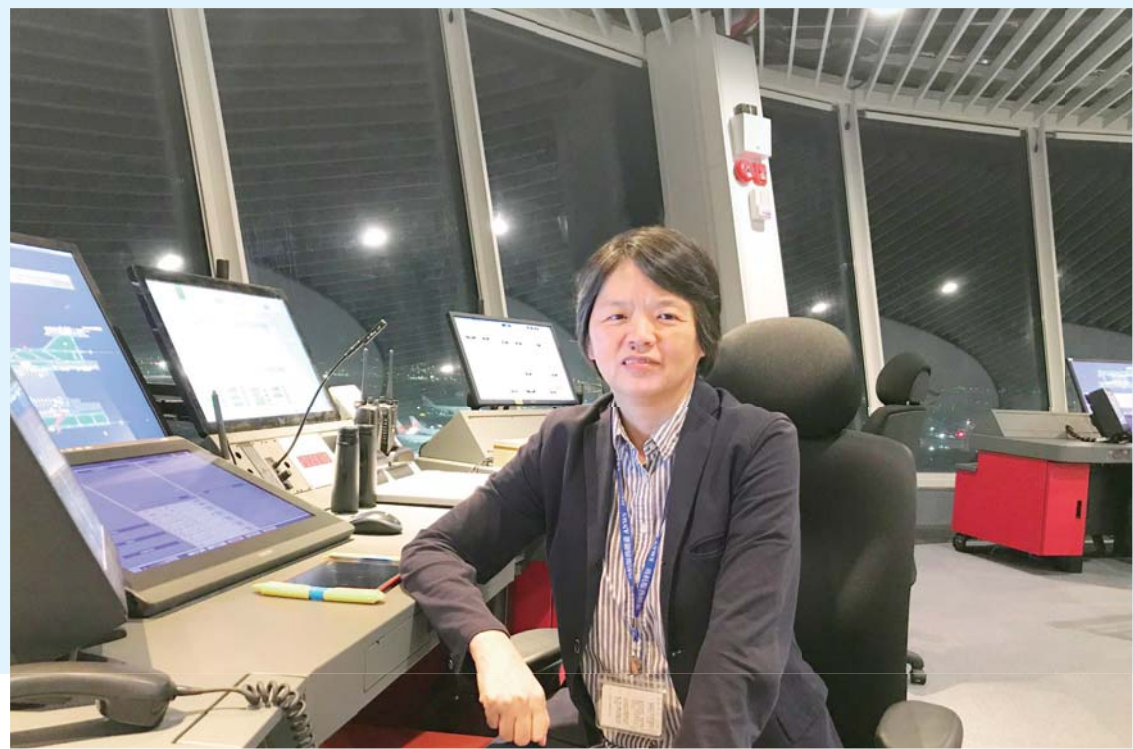
另因應桃園國際機場建設、航情複雜及資訊整合需求辦理之「臺灣桃園國際機場塔臺暨整體園區新建工程」已於108年順利完成，新塔臺園區也在108年12月16日正式啟用，完成建置的新塔臺、塔臺自動化系統及360度塔臺模擬機系統，具備智慧整合、資訊分享以及擬真訓練等功能，有效增進航管作業效能與機場整體運作效率，滿足未來桃園國際機場成長航行量所需的飛航服務作業。

此外，為慶祝總臺成立50週年，我們擴大舉辦相關系列活動，除廣邀民航夥伴辦理飛航友誼盃慢壘賽與羽球賽、製作紀念專刊及影片外，並舉辦50週年慶祝茶會暨回顧照片展，紀錄總臺成長蛻變的過程及不斷進步的足跡，我們也獲得民航局所屬機關行政績效考核第1名、國有財產管理考核第1名、為民服務績效評鑑第2名及公文績效檢核評鑑第2名的佳績，這些都是同仁在行政管理上不斷精進的結果，也是同仁積極向前的動力！

半世紀以來，守護飛航安全與提升服務品質是總臺責無旁貸的責任與使命，而隨著各區航情持續攀升成長，飛航資訊亟需分享整合，未來航空產業已不是單打獨鬥的時代，我們將與機場、航空公司、地勤基或各個飛航情報區緊密合作，並持續關注國際民航趨勢發展，開啓與國際協同合作、資訊共享時代，做好迎接未來挑戰的準備，朝著「飛航安全，世界一流；飛航服務，顧客滿意」目標努力，迎向下一個50高峰！

飛航服務總臺 總臺長

黃麗君





2019 is the 50th anniversary of the establishment of Air Navigation and Weather Services (hereinafter referred to as ANWS), which has encountered countless challenges since its establishment. Thanks to the support of the MOTC, CAA, Military Authorities, Taoyuan International Airport Corporation Ltd., airports and civil aviation operators, as well as the efforts of all predecessors and colleagues of the ANWS. We continue to achieve outstanding results and break records with the total number of controlled flight movements in Taipei Flight Information Region (hereinafter referred to as Taipei FIR) up to 1.85 million, the overflight movements up to 241,000, the aircraft movements at Taoyuan International Airport up to 267,000, and the total surplus reaching over NT\$2.06 billion in 2019 ! This has also brought about outstanding performance on improving regional cooperation, enhancing core businesses and administrative management !

On the way to regional cooperation, we launched the Automatic Radar Handoff Function with Hong Kong FIR after collaborating with Japan, and signed the Z401 Route Memorandum with the Fukuoka Area Control Center to improve air traffic safety and operational efficiency of both parties. In addition, after enabling the ATS Inter-facility Data Communication (AIDC) function with Manila FIR, the goal of implementing AIDC in all neighboring regions has also been achieved, and in order to improve air traffic management services between neighboring regions, the Common Regional Virtual Private Network (CRV) was first launched for AMHS connection and air traffic control Digital Voice Communication Switching System (DVCSS) with Manila FIR. Meanwhile, we continued to participate in Civil Air Navigation Services Organisation (CANSO) or other relevant regional air traffic service organizations' meetings to learn about the developmental trend in international civil aviation.

Safety is the foundation of air traffic services. With that, we continue to deepen aviation safety management not only by monitoring performance indicators, implementing risk management, performing operational inspections, collecting and maintaining safety information, but also by conducting the survey of "Effectiveness of Safety Management Communication Channel", change management case sharing and achievement reports, in order to improve safety communication on safety and risk management. In addition, we set out to plan on establishing a new Safety Management Information System, in the aim to promote statistical analysis of safety databases as well as achieving proactive and predictive risk management and improve the overall safety services.

Service is the performance of our professionalism and expertise. We continue to optimize air traffic service quality, and enhance the functionality of "Aeronautical E-Service (AES)" and "Aeronautical Meteorological Service Page (AMSP)" in order to provide users with more convenient services. In addition, the new ATS Messages Handling System (AMHS), ATMS-Extended Backup ATC System (EBAS) and Navigation Aids Facilities Charges Collection System have been launched to improve air traffic service and emergency response preparedness in Taipei FIR. In terms of navigation services, we have replaced and enabled DVCSS for 7 air traffic control towers, Northern Digital Microwave Communication System, LDA of Beigan Airport's runway 03, ILS of Tainan Airport's runway 36R, Cingcyuangang Airport's runway 18 and Kinmen Airport's runway 06, and Kaohsiung International Airport's approach lighting to ensure equipment properness and improve flight safety.

In response to the traffic grow, complex flight conditions, and undergoing construction of Taoyuan International Airport and the need for data integration in air traffic management, the "Taiwan Taoyuan International Airport New Air Traffic Control Tower Complex Construction Project" was completed in 2019. The new air traffic control tower park was officially opened on December 16th, 2019, and the Tower Automation System (TAS) and 360-degree tower simulator of the new air traffic control tower complex contains functions such as intelligent system integration, information sharing, and synthetic training environment. This effectively improves the efficiency of air traffic control and overall airport operations which meet the required air traffic service corresponding to the increasing air traffic flow of Taoyuan International Airport.

In addition, in order to celebrate the 50th anniversary of the establishment of ANWS, we have organized a series of related activities, which include inviting our partners to participate in the Aviation Friendship Cup Slow Pitch Softball and Badminton Tournament, producing special memorial issues and videos, and organizing the 50th anniversary of ANWS tea party and old photo exhibition which recorded development, transformation and continuous progress of the ANWS. Our achievements as a result of continuous improvement in administrative management, including have been awarded with first place in the CAA Annual Performance Evaluation of Agencies, first place in Evaluation of National Property Control and Performance, second place in Regular Evaluation of Service Performance, and second place in Evaluation of Document Performance, have also motivated colleagues on moving forward !

For nearly a half century, ANWS has been upholding its responsibility and duty for safeguarding aviation safety and improving service quality. With the growing air traffic flow in various regions, flight information is required to be shared and integrated. Regarding the future of aviation industry, we will closely cooperate with airports, airlines, ground crew or even various FIR, continue to keep track of international civil aviation trends to prepare for the challenges in the era of international cooperation and information sharing, and dedicate efforts toward the goal of "World-Class Flight Safety and First-Class Air Traffic Service" in the next 50 year !

Director  
Air Navigation and Weather Services

Joyce L.C. Huang



# 2 組織架構— 光芒



築巢匯聚人才  
Gathering Talents and Elites



總臺長 Director  
黃麗君 Huang, Li-chun



副總臺長 Deputy Director  
蔡宗穎 Tsai, Tsung-ying



副總臺長 Deputy Director  
林嘉明 Lin, Chia-ming



副總臺長 Deputy Director  
汪美惠 Wang, Mei-hui



顧任技正  
Senior Technical Specialist  
陳海根 Chen, Hai-geng



飛航業務室主任  
Air Traffic Service Management Office Chief  
董吉利 Tung, Chi-li



臺北區域管制中心主任  
Taipei Area Control Tower Chief  
李嘉玉 Li, Chia-yu



臺北近場管制塔臺臺長  
Taipei Approach Control Tower Chief  
袁星健 Yuan, Hsin-chien



高雄近場管制塔臺臺長  
Kaohsiung Approach Control Tower Chief  
謝碧岳 Shieh, Bi-yueh



安全辦公室臺長  
Safety Office Chief  
楊靜蕊 Yang, Ching-jui



航電技術室主任  
Engineering Office Chief  
鄭國璽 Cheng, Kuo-hsi



資訊管理中心主任  
Information Management Center Chief  
李淑芬 Lee, Shu-fen



臺北裝修區臺區臺長  
Taipei Aviation Facilities Sector Chief  
張吉松 Chang, Chi-sung



桃園裝修區臺區臺長  
Taoyuan Aviation Facilities Sector Chief  
詹文欽 Jan, Wen-chin



高雄裝修區臺區臺長  
Kaohsiung Aviation Facilities Sector Chief  
林勇青 Lin, Yor-kin



臺東裝修區臺區臺長  
Taitung Aviation Facilities Sector Chief  
張華恩 Chang, Hua-en



臺北飛航情報中心主任  
Taipei Flight Information Center Chief  
林慧珠 Lin, Hui-chu



臺北航空氣象中心主任  
Taipei Aeronautical Meteorological Center Chief  
余曉鵬 Yu, Sheau-peng



臺北航空通信中心主任  
Taipei Aeronautical Telecommunication Center Chief  
王世杰 Wang, Shih-chieh



供應室主任  
Logistics Office Chief  
邱顯棟 Chiu, Hsien-tung



秘書室主任  
Secretariat Office Chief  
羅肇欣 Lo, Chao-hsin



人事室主任  
Personnel Office Chief  
謝國雄 Hsieh, Kuo-shiung



政風室主任  
Civil Service Ethics Office Chief  
呂叔瑾 Lu, Shu-wei



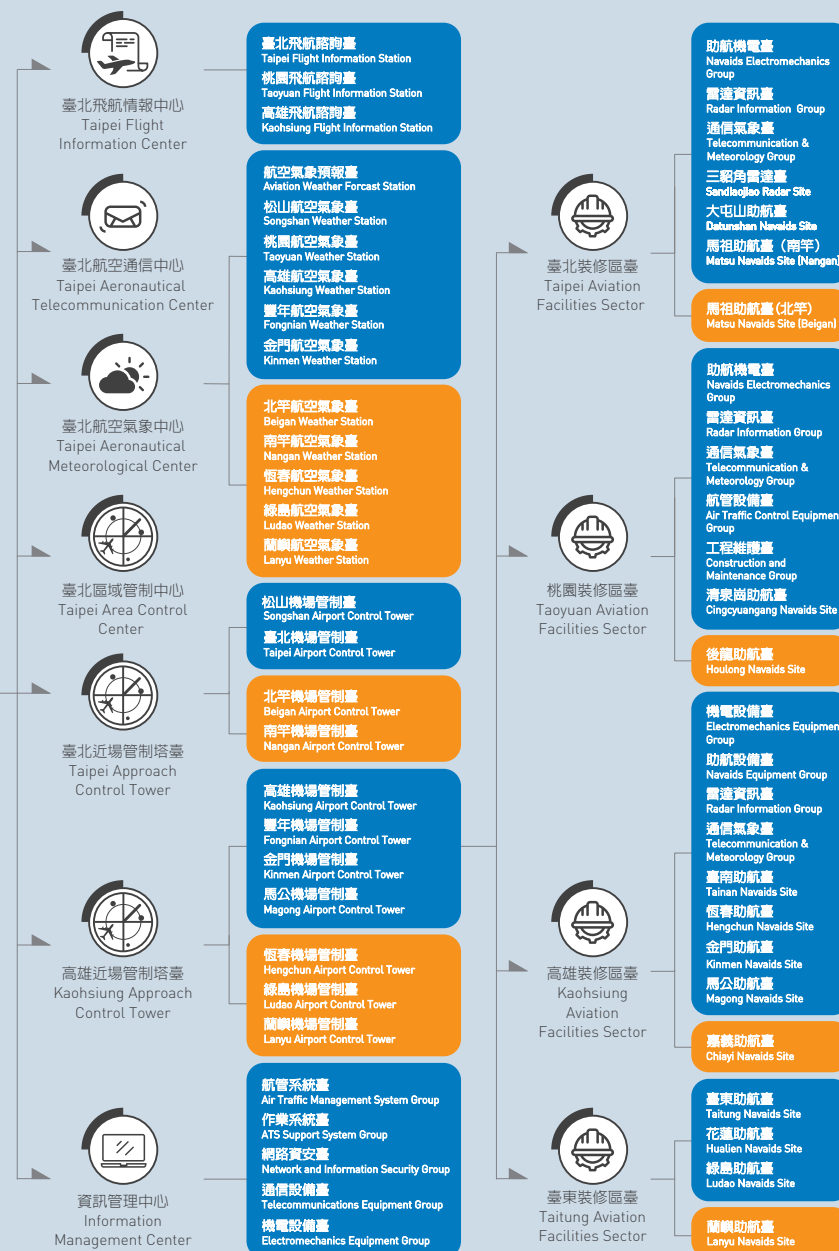
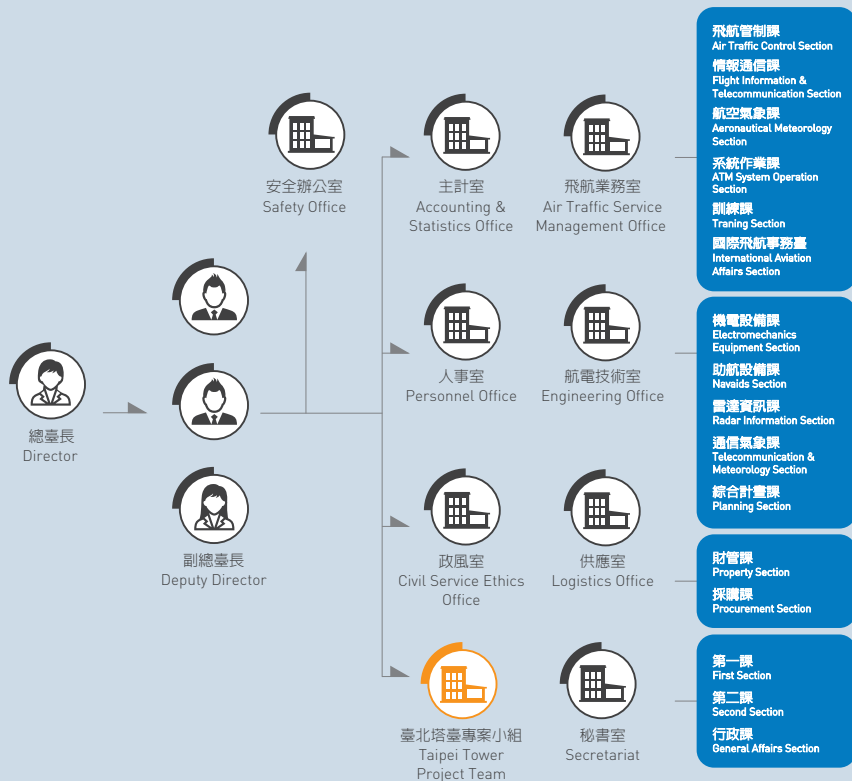
主計室主任  
Accounting and Statistics Office Chief  
何麗卿 Ho, Li-ching



臺北塔臺專案小組副主任  
Taipei Tower Project Team Deputy Chief  
畢金菱 Bi, Jin-ling



- 19個一級單位  
First-class Units: 19
- 59個二級單位  
(15個課、44個臺)  
Second-class Units: 59
- 15個任務單位  
Task Force Units: 15
- 108年預算員額906人  
2019 Personnel: 906ppl







## 一、飛航管制

### (一) 臺北飛航情報區管制架次續創新高

108 年本區總管制架次達 1,850,460 架次，較 107 年成長 5.32%。

### (二) 與香港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

因應近年過境本區之航行量大幅增長，108 年 1 月 3 日啓用 TOC/AOC 雷達自動交接管功能，透過自動化功能代替原雷達交接管程序，減少雙方管制員之工作量，另邊界點同高度航機原 30 浬隔離縮短為 20 浬，增進雙方航路流量，提升飛航安全及飛航服務品質。

## 1. Air Traffic Control

### I. Number of controlled flight movements in Taipei FIR continues to reach new heights

The total number of controlled flight movements in 2019 was 1,850,460 which increases 5.32% comparing to 2018.

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

In response to the recent surge of flight volume in Taipei FIR, the TOC/AOC Automatic Radar Handoff Function with Hong Kong Control has been launched on January 3rd, 2019. With automation replacing radar handoff procedures, the workload of both parties has been significantly reduced, while the separation at the boundary point is shortened from the original 30 NM to 20 NM, which in turn improved the air traffic flow, flight safety and quality of air traffic services for both parties.



### (三) 與福岡飛航情報區重新簽署 Z401 航路備忘錄

108 年 3 月 15 日與福岡區域管制中心完成簽署航路備忘錄，調整同高度航機交接管間距標準及取消原空層限制，提升雙方飛航安全、航路流量及航管服務。

### (四) 與馬尼拉飛航情報區實施飛航服務單位間數據通信 (ATS Inter-facility Data Communication, AIDC)

本區自 101 年起分別與日本、香港、上海及廣州陸續實施 AIDC 功能，至 108 年 12 月 5 日與馬尼拉啟用 AIDC 功能後，已完成與週邊鄰區均實施 AIDC 功能之目標，增進與鄰區間之航管服務效能，確保飛航資料傳遞之正確性。

### (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，並於起降航機發生鳥擊、機械故障、乘客身體不適等異常狀況時提供緊急應變處置，確保航機及乘客安全。108 年共計提供 364 次緊急應變處置（含乘客身體不適、鳥擊、機械故障等異常狀況）。

### (六) 辦理飛航管制人力與席位需求委外評估案

因應本區航行量持續成長及桃園國際機場持續擴充，重行評估航管人力席位配置，自 108 年 6 月至 8 月完成二階段不同類型航管單位陣地考察；同年 7 月完成搜集泰國、挪威及阿曼等國家案例分析之參考資訊；12 月完成期末報告，提供本總臺有關訓練、高齡管制員、作業概念、班務管理系統及未來航管單位人力席位配置原則等建議，俾掌握本區管制作業環境之航管人力需求。

### (七) 辦理雷達管制員專案督查作業

自 104 年起分年實施塔臺管制員、雷達管制員、協調員及班務督導專案督查，廣續辦理第 2 次雷達管制員督查作業，測驗管制員符合標準作業程度，識別作業弱點予以加強，並鼓勵同仁持續自我學習與精進，自 108 年 4 月至 8 月執行，共執行 24 梯次、110 人次。

### III. Re-signed the Z401 Route Memorandum with Fukuoka FIR

On March 15th, 2019, ANWS has signed the Z401 Route Memorandum with Fukuoka Area Control Center, adjusted the separation minima for aircraft handoff at the same altitude, and lifted the original level restrictions in order to improve aviation safety, air traffic flow and air traffic control services of both parties.

### IV. ATS Inter-facility Data Communication (AIDC) with Manila FIR was implemented

Since 2012, the AIDC function has been implemented separately with Japan, Hong Kong, Shanghai, and Guangzhou FIR. ANWS has achieved the goal of implementing the AIDC function with all the neighboring regions after implementing AIDC function with Manila on December 5th, 2019, for the purpose of improving air traffic management services between neighboring regions, and ensure the correctness of air traffic data transfer.

### V. Emergency response and medical assistance

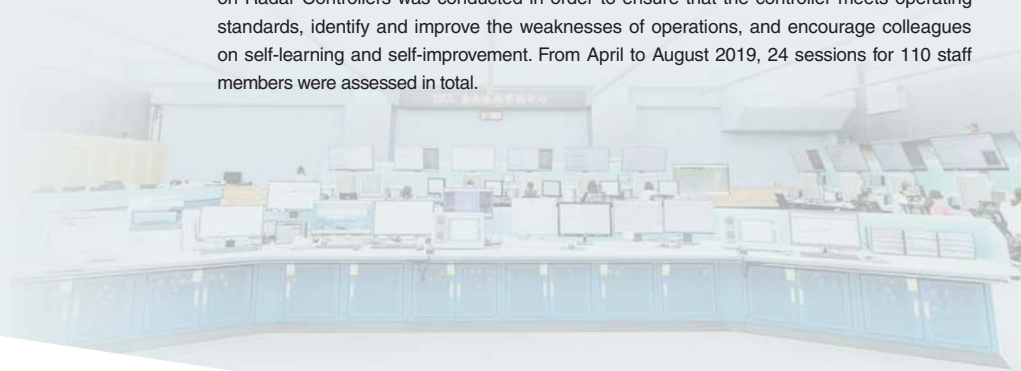
In addition to providing Air Traffic Control services, all ATC units are prepared to handle abnormal or emergency situations during takeoff and landing such as bird strikes, mechanical failures, and sick passengers' assistance. This ensures the safety of passengers and aircraft. A total of 364 emergency situations (including sick passengers' assistance, bird strikes and mechanical failures) were handled in 2019.

### VI. Commissioned Assessment of ATC Workforce and Working Position

To cope with the increasing air traffic demand in Taipei FIR and continuous expansion of Taoyuan International Airport, the human resource allocation of air traffic control has been re-evaluated by a contracted specialist team. From June to August 2019, ANWS has conducted two phases of on-site inspections on various types of air traffic control units. In July 2019, the case studies of countries such as Thailand, Norway and Oman have been collected as reference. In December 2019, the final report was completed in order to provide suggestions on management of training, senior controllers, operating concepts, shift management systems, and human resource allocation principles for future air traffic control system in Taipei FIR, as well as to keep in line with human resource requirements for air traffic control in Taipei FIR.

### VII. Competency assessment of Radar Controllers

Since 2015, competency assessment was carried out yearly on Air Traffic Controllers, namely to Radar Controllers, Coordinators and Shift Supervisors. In 2019, the 2nd round of assessment on Radar Controllers was conducted in order to ensure that the controller meets operating standards, identify and improve the weaknesses of operations, and encourage colleagues on self-learning and self-improvement. From April to August 2019, 24 sessions for 110 staff members were assessed in total.





## 二、飛航情報

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

108 年 9 月 24 日機場場面飛航公告示意圖新增勾選「自動更新」功能，網頁每 5 分鐘自動更新，使用者亦可自行調整自動更新時間。

### (二) 規劃新一代航空情報服務系統 (Aeronautical Information Services System, AISS)

108 年 3 月 12 日成立航空情報服務系統研究小組，研讀國際文件與蒐集國際航空情報管理相關資料，進行優劣分析，做為規劃本區航空情報作業參考，以符合國際規範，增進作業安全。

### (三) 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。108 年總計通報 5,372 次。

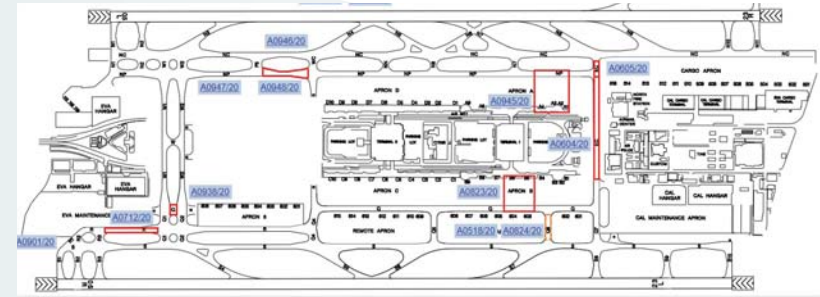
## 三、航空通信

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

108 年 3 月 13 日進行新 AMHS 南北異地備援演練，驗證南部飛航服務園區 AMHS 系統轉報功能及網頁用戶正常收發電報。



國際文件—ANNEX 15、DOC10066、DOC8126  
ICAO documents-- ANNEX 15、DOC10066、DOC8126



機場場面飛航公告示意圖  
Aerodrome NOTAM Display

## 2. Flight Information

### I. Enhancing the function of Aeronautical E-Services (AES)

On September 24th, 2019, the "Automatic Update" function of the airport's pre-flight briefing was added. The website is automatically updated every 5 minutes, and users can also manually adjust the time for automatic update.

### II. Planning of the new Aeronautical Information Services System (AISS)

On March 12th, 2019, an Aeronautical Information Services System Research Team was set up to study international documents, collect relevant information on international aeronautical information management, and analyze the pros and cons as reference for aeronautical information operations in Taipei FIR, in order to comply with international standards and enhance operating safety.

### III. Notification of NOTAM/aviation safety information

Proactively informing airlines on publications or amendments of NOTAMs, AIPs, AIP supplements, and other aeronautical information regarding airspace and navigation warnings, missile warnings and other military activities that may affect aviation safety. Totally 5,372 of such notices were reported in 2019.

## 3. Aeronautical Telecommunication

### I. To hold the "ATS Messages Handling System (AMHS)" north-south remote backup drill

The AMHS north-south remote backup drill was held on March 13th, 2019 to test the AMHS reporting function in South ATS Park and the function of telecommunication for web users.





## (二) 啓用新一代飛航訊息處理系統 (AMHS)

- AMHS 是本區與國際間交換飛航服務訊息的重要資訊系統，為確保本區航空通信服務與國際接軌，總臺於 106 至 107 年間完成新一代 AMHS 系統之建置，並於 108 年 4 月 17 日正式啓用。
- 本專案在總臺與廠商 Frequentis Comsoft 公司合作下，圓滿成功，該公司在其官網及社群網站發布有關總臺在飛航訊息處理系統佈署的成功經驗新聞稿，對我國在亞太空運的重要地位及建置先進的飛航訊息交換系統有正向之報導。

## (三) 汰換總臺助航設備服務費收費系統

為因應飛航服務收費及帳務處理需求，108 年 1 月至 6 月完成新舊收費系統平行作業，7 月 22 日新系統啓用，11 月 11 日完成飛航服務費帳單開立作業。

### II. Launch of the new "ATS Message Handling System (AMHS)"

- AMHS is an information system which plays a crucial role in the exchange of air traffic service related information between Taipei FIR and other regions. ANWS completed the installation of the new AMHS between 2017 and 2018, and officially launched it on April 17th, 2019 to ensure that Aeronautical Telecommunication Services in Taipei FIR are in sync with international standards.
- ANWS has successfully completed the project in cooperation with Frequentis Comsoft, which issued a press release on its official website and social networking site about ANWS' successful experience in AMHS deployment, with positive reports on Taiwan's position in Asia Pacific air transports and the establishment of advanced AMHS.

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

For the purpose of processing air traffic service charges collection and processing capacity of related account, the parallel system operation was completed on January to June 2019. The new system was launched on July 22nd, 2019, and the air traffic service bill started issuing with the new system on November 11th, 2019.



助航設備服務費收費系統  
Navigation Aids Facilities Charges Collection System

## 四、航空氣象

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

108 年 9 月 20 日航空氣象服務網新增本區 12 個民用機場之機場預報 (Terminal Aerodrome Forecasts, TAF) 圖形化產品顯示網頁，可透過圖表及文字逐時顯示 TAF 資訊，並可以單選或多選機場方式，提供最近 10 天內 TAF 圖形化產品之查詢及下載。

### (二) 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。108 年發布簡訊次數計 1,926 次。

### (三) 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 3,848 次；提供政府機關及接受民間機構申辦機場氣象資料計 251 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。

桃園航空氣象臺 03 時 18 分預報：臺灣桃園國際機場未來 3 小時內可能受雷雨影響。桃園航空氣象臺，電話：033983053。

馬祖北竿機場於 03 月 31 日 14 時 00 分，能見度/雲霧高於 2400 公尺/800 呎 (R03)。臺北航空氣象中心，電話：033841454。

氣象中心業已發布清明連續假期疏運計畫期間機場天氣預報資料，請至以下網址查詢

<https://aoaws.anws.gov.tw/data/tamc/weather/202004061200.doc>  
臺北航空氣象中心，電話：033841454。

航空氣象簡訊 Aeronautical Meteorology Messages

## 4. Aeronautical Meteorology

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

Starting from September 20th, 2019, the AMSP added the Terminal Aerodrome Forecasts (TAF) product display graphics for 12 civil airports in the region. TAF can be displayed hourly through charts and text, and enables search and download of TAF graphic products in the last 10 days for selected single or multiple airports.

### II. Providing aeronautical meteorology message services

Aeronautical meteorology 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 1,926 messages were provided in 2019.

### III. Providing aeronautical meteorology data services

3,848 telephone inquiries related to aeronautical meteorology at civil aviation airports were handled, as well as 251 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.



#### (四) 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」

108 年於天氣資料整合與即時預報系統 (WINS) 新增雲量及能見度預報產品、區域模式 (WRFD、TWRF、CAAWRF、RWRF 等) 及區域系集預報產品。

#### (五) 規劃辦理「航空氣象現代化作業系統汰換及更新計畫 (Advanced Operational Aviation Weather System Renewal and Update, AOAWS-RU)」

為提升飛航安全與服務品質，達成亞太地區飛航服務提供領先者之組織目標，規劃於 2021 年至 2024 年間辦理航空氣象現代化作業系統汰換及更新計畫，俾與國際接軌，持續提升本區航空氣象服務品質。

#### (六) 編製航空氣候年報

108 年 3 月 31 日完成 107 年航空氣候年報，置於總臺官網 (<https://www.anws.gov.tw>) / 業務宣導 / 出版品項下，提供各單位下載使用民用機場之氣候統計資料。

#### IV. 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 2019, cloud cover and visibility forecasts, regional models (such as WRFD, TWRF, CAAWRF and RWRF) and regional ensemble forecasts were added to the Weather Integration and Nowcasting System (WINS).

#### V. Planning of "Advanced Operational Aviation Weather System Renewal and Update (AOAWS-RU)"

In order to improve aviation safety and service quality, and achieve the organizational goals of leading air traffic service providers in the Asia-Pacific region, ANWS plans to renew and update the Advanced Operational Aviation Weather System (AOAWS) between 2021 and 2024 to be in line with international standards, and continues to enhance the aviation weather service quality in Taipei FIR.

#### VI. Publication of 2018 Aerodrome Climatological Annual Summaries

On March 31st, 2019, the 2018 Aerodrome Climatological Annual Summaries were completed and published on the ANWS's official website ([http://www.anws.gov.tw/Business Dissemination/Publication](http://www.anws.gov.tw/Business%20Dissemination/Publication)). There, statistical weather information for civil airports is available for download.

## 五、航空電子

### (一) 強化通信服務系統

- 完成汰換臺東、恆春、馬公、南竿、北竿、金門及松山等 7 座塔臺航管數位語音交換系統，提升通信品質及系統裝備妥善率。
- 完成汰換臺北飛航情報區北區數位微波系統，並於 108 年 9 月 20 日啟用，提高設備可靠性，確保飛航服務品質。
- 亞太地區共同虛擬私有網路 (Common Regional Virtual Private Network, CRV) 服務經與鄰區完整測試後，率先與馬尼拉飛航情報區於 108 年 9 月 2 日啟用 AMHS 數據連線及航管語音通訊服務。
- 完成飛航服務業務網路設備汰換，自 108 年 7 月 29 日至 10 月 31 日完成 23 個陣地設備安裝、測試及轉移，提升整體飛航服務業務網路傳輸可靠度和安全性。



北管微波  
Microwave Communication System in North ATS Park



桃園微波  
Microwave Communication System in Taoyuan area

## 5. Aeronautical Electronics

### I. Enhancing communication service system

- The Digital Voice Communication Switch System (DVCSS) for 7 air traffic control towers in Taitung, Hengchun, Magong, Nangan, Beigan, Kinmen, and Songshan have been replaced in order to improve communication quality and system equipment properness.
- The replacement of Taipei FIR Northern Digital Microwave Communication System is completed and commissioned on September 20th, 2019 for reliability enhancement, ensuring quality of air traffic services.
- After a comprehensive test of the Asia Pacific Common Regional Virtual Private Network (CRV) service with neighboring regions, ANWS was the first to launch the AMHS connection and air traffic control DVCSS with Manila FIR on September 2nd, 2019.
- In terms of the replacement of air traffic service network equipment, 23 on-site equipment installations, testing and transfer have been conducted from July 29th to October 31st, 2019 in order to improve the reliability and security of overall transmission in the air traffic service network.





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

- 完成北竿機場 03 跑道 LDA/DME、臺南機場 36R 跑道 ILS/DME 及清泉崗機場 18 跑道 ILS/DME 設備汰換。
- 金門機場 06 跑道 ILS/DME 經過模擬評估、現地勘查、施工架設、信心與飛航測試等作業，並經儀航程序作業驗證，已於 108 年 12 月 5 日正式啟用；24 跑道亦已完成規劃將由原本 LDA 汰換更新為 ILS，改善離島機場助航設施。

**(三) 汰換後龍、綠島、恆春及西港 VOR/DME 設備**

完成後龍助航臺 VOR/DME 設備汰換，並於 108 年 12 月 10 日啟用，提高設備可靠度，確保飛航服務品質。

**II. Continued replacement of the Instrument Landing System (ILS) in Taipei FIR**

- The replacement of LDA/DME of Beigan Airport's runway 03, ILS/DME of Tainan Airport's runway 36R and ILS/DME of Cingcyuangang Airport's runway 18 are already completed.
- After simulation assessment, on-site inspections, constructions, confidence test, flight test, and the verification of instrument flight rules (IFR) procedures, the ILS/DME of Kinmen Airport's Runway 06 was officially commissioned on December 5th, 2019. The LDA of Kinmen Airport's Runway 24 has been planned to be replaced by ILS in order to improve navigation facilities at the airports of outlying islands.

**III. Continued replacement of VOR/DME facilities in Houlong, Ludao, Hengchun and Xigang**

The replacement of Houlong VOR/DME was completed and commissioned on December 10th, 2019 for reliability enhancement, ensuring quality of air traffic services.

**(四) 完成機場跑道地帶助航設施結構物增設斜切順坡工程**

108 年 3 月 15 日、7 月 17 日、7 月 28 日、9 月 12 日分別完成恆春機場、清泉崗機場、臺南機場、臺東機場跑道地帶助航設施結構物增設斜切順坡工程，提高跑道地帶安全性。

**(五) 增設及汰換各機場助航燈光設備**

- 108 年 5 月 14 日啟用高雄國際機場 27 跑道進場燈，突顯 27 跑道的進場方向與跑道頭位置，同日，分別提供 09 跑道與 27 跑道精確進場滑降指示的 2 座 PAPI 燈 (Precision Approach Path Indicator, PAPI) 也在更新完成後，一併重新開放使用，提升航機落地操作的安全性。
- 108 年 10 月 21 日完成馬祖南竿、北竿機場助航燈光用恆流變壓器及燈控系統汰換。

**IV. Completed the construction of oblique slope for the air navigation facilities in the airport runway area**

The construction of oblique slope projects for air navigation facilities in the runway area of Hengchun Airport, Cingcyuangang Airport, Tainan Airport, and Taitung Airport was completed on March 15th, July 17th, July 28th and September 12th, 2019 respectively.

**V. Increasing and replacing airport navigational lightings**

- The approach lighting systems of Kaohsiung International Airport's runway 27 was launched on May 14th, 2019, to highlight the approach direction of runway 27 and the position of runway threshold, and provided two Precision Approach Path Indicators (PAPI) for runway 09 and 27 on the same day, improving the safety of aircraft ground operation.
- Replacement of air navigation lights constant current transformer and control system in Matsu Nangan Airport and Matsu Beigan Airport was completed on October 21st, 2019.



金門機場 06 跑道 ILS  
The ILS of Kinmen Airport's runway 06



高雄機場 27 跑道進場燈  
The Approach lighting systems of Kaohsiung International Airport's runway 27





#### (六) 汰換各機場助航機電設備

- 108 年 8 月 15 日完成汰換三貂角雷達臺、馬祖（北竿）助航臺柴油引擎發電機，提升助航裝備電源之可靠性與穩定性。
- 108 年 7 月 26 日完成新增松山機場塔臺、豐年機場跑道燈光迴路及汰換桃園機場 STAR2000 雷達機房不中斷電源系統（UPS）。

#### (七) 精進資通安全業務及防護作為

- 108 年 5 月 30 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) 精進飛航服務系統

- 108 年 3 月 14 日完成飛航管理系統擴充備援系統（ATMS-Extended Backup ATC System, EBAS）作業轉移及啟用，取代已屆汰除年限之獨立備援航管系統，做為飛航管制即時之備援系統，強化本區飛航服務應變能力。
- 辦理飛航管理自動化系統期中升級，108 年 10 月 29 日完成南、北部飛航服務園區數位語音交換系統（Digital Voice Communication Switching System, DVCSS）系統軟體升級，11 月 1 日飛航管理系統（Air Traffic Management System, ATMS）也完成系統設計審查。

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

- Diesel engine generators in Sandiaojiang Radar Site and Matsu (Beigan) Nav aids Site were replaced on August 15th, 2019, which improves the reliability and stability of the power supply for navigational aids.
- On July 26th, 2019, the Uninterruptible Power Supply (UPS) of Songshan Airport Control Tower, Fongnian Airport's runway lighting circuit and Taoyuan Airport's STAR2000 radar facilities were replaced.

#### VII. Improvement of information security and protection

- Our Information Security Management System (ISMS) was audited by external auditors on May 30th, 2019 and we successfully achieved ISO 27001:2013 certification.
- ANWS completed a scan of penetration testing, as well as system vulnerabilities and IT security diagnostic assessment. This ensures the cyber security of air traffic service IT systems.

#### VIII. Improvement of Air Traffic Service Systems

- The transfer and launch of ATMS-Extended Backup ATC System (EBAS) was completed on March 14th, 2019 to replace the Independent Backup ATC System (IBAS) and serve as a real-time backup for air traffic control in order to strengthen the emergency response preparedness of the air traffic services.
- For the upgrade of Air Traffic Control Automation System, the DVCSS software for South and North ATS Park was upgraded on October 29th, 2019, and review of Air Traffic Management System (ATMS) design has already been completed on November 1st, 2019.





## 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。
- 108 年辦理作業單位「安全管理溝通管道有效性」問卷調查，檢視並加強溝通管道類型、傳達內容及其有效性，鼓勵同仁主動提報，強化安全溝通及日常作業風險管理。
- 持續推動改善改變管理，108 年完成 13 個幕僚及作業單位「共同辦理改變管理案」，增進作業標準化與一致性。
- 參與作業單位安全行動小組會議，加強潛在風險事件識別、建立單位安全議題與推動安全管理四大面向相關工作。

## 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.
- In 2019, the survey of the "Effectiveness of Safety Management Communication Channel" was conducted and reviewed to improve various types of communication channels as well as its content and effectiveness, encouraging colleagues to report actively, and enhancing communication on safety and improve daily operation risk management.
- In 2019, ANWS continued to improve change management in SMS, and has completed the "Joint Change Management Project" with 13 units for standardization and consistency of operations.
- Participate in operational unit's Safety Action Group Meeting to enhance potential risk identification, as well as to establish relevant work on safety issues and promotion of the four major aspects of safety management system.



專業知識分享研討會  
Professional Knowledge-Sharing Seminar



民航局系統性查核  
Systematic audit conducted by CAA



飛航服務安全符合性查核訓練課程  
ATS SMS Auditor Training

### (二) 修正安全管理指導文件

108 年修訂「飛航服務安全管理實施計畫」、「飛航服務安全管理系統手冊」、「飛航服務安全查核手冊」及「飛航服務安全管理自願報告要點」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。
- 持續參與各單位安全風險評估及改變管理評估作業，並提出相關建議，識別組織危害及風險緩解策略。
- 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，主動進行風險管控。

### II. Amendment of SMS documents

Revision of our organization's "Safety Management Implementation Plan", "SMS System Manual", "Safety Audit Manual", and "ATS Safety Management Voluntary Reporting Guidelines".

### 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 managerial meetings. Progress in safety issues is controlled and monitored as part of the safety risk management.
- ANWS have continued to participate in risk assessments evaluations and the change management evaluation meetings, and have made relevant recommendations to identify organizational hazard factors and risk mitigation strategies.
- Internal and external voluntary reports were received, and the cases reported were processed and tracked with proactive risk management.





#### (四) 執行安全績效控管與查核

- 108 年配合民航局實施 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 15 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。

#### (五) 辦理安全推廣與訓練

- 編撰並發送 4 期安全管理資訊彙編、辦理 6 梯次專業知識分享會、改變管理優良案例報告及改善改變管理成果發表等 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「飛航服務安全管理訓練」2 梯次，32 人次；「飛航服務安全符合性查核訓練」1 梯次，19 人次；「飛航服務安全符合性查核複訓」2 梯次，29 人次；於相關飛航服務人員年度複訓講授「108 年飛航服務安全管理作業宣導」課程 19 梯次；另 10 月 4 日針對合約商長期駐點人員辦理「飛航服務安全管理基本觀念」實體課程 1 梯次，並錄製教學影片供同仁及廠商後續訓練使用。
- 108 年 4 月 9 日及 9 月 4 日針對民航局推動之「公正文化」進行宣導，鼓勵報告意願並提升安全文化。

#### (六) 規劃建置飛航服務安全管理資訊系統

賡續維護安全管理資訊系統 (SERA) 相關安全資料；另規劃建置整合式飛航服務安全管理資訊系統，於 108 年 4 月 3 日成立工作小組，召開 5 次工作小組及功能需求討論會議，完成系統規劃、各模組功能需求研擬，並完成採購作業，預計 109 年 12 月完成。



改善改變管理成果發表會  
Presentation of the improvement results of change management

#### IV. Safety performance monitoring and safety audits

- In 2019, CAA supervised and conducted 1 systematic audit and 10 external compliance audits to ANWS. ANWS also conducted 15 internal audits based on the spirit of autonomous safety management. 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.

#### V. Safety Promotion and Training

- ANWS compiled and published 4 issues of safety management information newsletters, and conducted 12 safety promotion activities including 6 professional knowledge-sharing workshops, and the release of change management case reports and improvement results of change management. ANWS also attended CANSO annual conferences to ensure we update information on SMS and the latest global trends.
- In 2019, ANWS conducted 2 sessions of "Air Traffic Service Safety Management training" with 32 participants, 1 session of "ATS SMS Auditor Training" with 19 participants, 2 sessions of "ATS SMS Auditor Recurrent Training" with 29 participants, and 19 sessions introduction to "Highlights of ATS SMS measures in 2019" were held in annual retrain talk for relevant air traffic service personnel. On October 4th, 2019, 1 session of "Basic Concepts on ATS Safety Management" was conducted for long-term contractors, and videos of follow-up training were provided for colleagues and manufacturers.
- On April 9th and September 4th, 2019, CAA's brochure of "Just Culture" was advocated to ATS units in order to encourage reporting and improve safety culture.

#### VI. Plan on establishing the Safety Management Information System

Continue maintaining safety information in the SERA system. At the meantime, ANWS plans to establish a new Safety Management Information System to meet the organizational requirement. On April 3rd, 2019, a work team has been set up, which held 5 Workgroup and functional requirements discussion meeting, finishing systems planning, modules functional requirements and procurement. The system is expected to be completed in December 2020.





## 七、桃園國際機場新塔臺園區正式啓用～「天際新視野・飛航心服務」

完成「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，完善航管作業能量。

### （一）新塔臺暨整體園區新建工程

新塔臺位在機場第一、二航廈間，以臺灣著名的自然景觀野柳女王頭為發想，取其凝望守視之涵義，代表管制員注視守護航機動態，並融合兩座航廈建築特色，展現國家門戶建築意象。新建工程於 108 年 11 月 20 日完工，高度 65 公尺之新塔臺，塔頂管制室面積是原來的 2.5 倍、高度為 1.4 倍（舊塔臺 46 公尺），提供流暢的作業動線及完整的視野，另外管制員使用的工作檯也特別設計升降功能，符合人體工學，優化管制作業環境。新塔臺亦符合耐震 7 級與抗風 14 級的要求，確保飛航安全及服務不中斷。

## 7. The inauguration of Taiwan Taoyuan International Airport New Air Traffic Control Tower Park ~ "New Horizons for Air Traffic Service"

The "Taiwan Taoyuan International Airport New Air Traffic Control Tower Park Project" is completed. The project including the new ATC control tower buildings, ATC tower automation system to accommodate the demand of international airports with high traffic volume, and a 360-degree tower simulator to optimize air traffic control capability.



新塔臺園區環境  
New Air Traffic Control Tower Park

### I. New Air Traffic Control Tower Complex Construction Project

The new air traffic control tower is located between Terminal 1 and Terminal 2 in the airport. In order to present the image of being the national gateway, the outline of the new tower is inspired by Taiwan famous natural landscape, the Queen's Head rock in Yehliu Geopark, which represents air traffic controllers as the guardian of airport to monitor and watch traffic movement in the airfield. It also took the architectural characteristics of two terminal buildings into the design. The tower park is completed on November 20th, 2019. Few comparisons between the new and old tower are the height 65 meters to 46 meters is 1.4 times, control room space on the top of tower is 2.5 times. For the better working environment not only more spacious control room but also providing ergonomic design controller working position (CWP) with special lifting functions. The new tower building also consider special requirements including seismic resistance level 7 and wind resistance level 14 to ensure flight safety and uninterrupted service.

### （二）整合型塔臺自動化系統

108 年 9 月 25 日完成系統驗收，TAS 整合監視訊號、飛航資料、氣象觀測、場面燈光、停機坪管理等 15 類外部系統，以智慧化方式提供整合式航情顯示資訊，提升管制作業效率，另提供安全告警系統，可監視機場地面運作，並偵測潛在飛安衝突，提升安全防線。

### （三）360 度塔臺模擬機系統

108 年 7 月 9 日完成系統驗收，直徑 8 公尺、高度 2.91 公尺、360 度環型螢幕之塔臺模擬機系統，具備依需求建立各機場場景及特殊案例功能，目前已建置桃園、松山、高雄、澎湖、豐年（包含志航基地）等 5 座機場，並可調整氣候變化模擬實際場景，強化塔臺管制員對各類飛航及環境情境改變訓練，提升緊急應變能力。

### II. Tower Automation System(TAS)

The TAS final acceptance is completed on September 25th, 2019. TAS provides air traffic controllers with a comprehensive traffic information by intelligently integrating 15 types of external systems such as surveillance, flight plan, meteorological data, airfield lighting, and parking bay management to improve the efficiency of ATC operations. It also provides safety alerts function to monitor the traffic movement and detect the potential confliction in order to ensure the safety of traffic movement.

### III. 360-Degree Control Tower Simulator

The final acceptance of tower simulator is completed on July 9th, 2019. The tower simulator consists of a cylindrical screen with arc of 360°, a diameter of 8 meters and 2.91 meters height. It provides the flexible function to create simulated airport scenes and special traffic condition as required. Currently, five airport scenes have already been created, including Taoyuan, Songshan, Kaohsiung, Penghu, Fengnian (including Zhi-Hang Air Base), with highly configurable and adaptable weather simulation. The advanced simulator enhances ATC's capability in response to the variety of traffic and environment, as well as abnormal and emergency events.



民航局方副局長志文體驗 TAS 作業  
Deputy Director General of CAA, Fang, Chih-wen gets a first-hand experience of TAS operations



360 度塔臺模擬機室  
360-degree tower simulator room



#### (四) 新塔臺園區啟用活動

因應新塔臺園區啟用，舉辦相關系列活動，108 年陸續辦理塔臺照片徵選、部長一日管制員、交通部記者會、粉絲見面會等活動，另於 108 年 12 月 16 日於桃園國際機場新塔臺園區舉辦啟用典禮，由交通部林部長佳龍主持，並邀請桃園市鄭市長文燦、桃機公司、航警局、各航空公司、往來合作的中外廠商及媒體朋友共襄盛舉，共同見證這歷史性的一刻，現場也展出新舊塔臺攝影作品，一同分享新塔臺園區啟用的喜悅，啟用後的新塔臺園區以全新風貌、萬全準備，採用更有效率、智慧化的方式提供飛航服務，繼續為桃園國際機場以及臺灣的飛安提供最堅強的後盾。

#### IV. The inauguration of new ATC tower park

For celebrating the launch of new air traffic control tower park, a series of events are conducted in 2019, including the tower photography competition, the Minister's first-hand experience as a one-day ATC, the press conference, and Facebook fans activities. In addition, Minister of MOTC, Lin, Chia-lung gives a speech to appreciate ANWS in the grand open ceremony, and invited Mayor of Taoyuan City Government, Cheng, Wen-tsan, Taiwan Taoyuan International Airport Corporation, Aviation Police Bureau, airline companies, domestic and foreign cooperative companies and the media to participate in this historic moment. The selected the old and new tower pictures for photography exhibition are displayed on-site, ANWS shares the joy of launching the new air traffic tower park to all guests. The new-look air traffic control tower is fully ready to provide the service by more efficient and intelligent methodology and to continuously be the strongest support for Taoyuan International Airport and flight safety in Taiwan.



部長主持啟用典禮  
Minister of MOTC, Lin, Chia-lung hosts the inauguration ceremony



TAS 管制的第一架航機  
First TAS-controlled aircraft

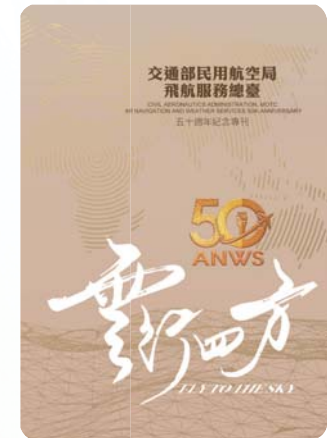


#### 八、50 週年臺慶活動 ~ 「安全領航 · 幸福飛揚」

為慶祝總臺成立 50 週年，擴大舉辦球類競賽活動，108 年 6 月 1 日及 9 月 22 日分別舉辦飛航友誼盃慢速壘球賽、羽球賽，廣邀交通部及相關飛航服務夥伴共同參與，達到以球會友及培養團隊合作的精神，並於 108 年 8 月 30 日於北部飛航服務園區舉辦慶祝茶會暨回顧照片展，交通部林部長佳龍、民航局林局長國顯、國家運輸安全調查委員會、航空警察局、中央氣象局、空軍等各單位、各航空公司、往來中外廠商、專家學者以及總臺退休主管、同仁齊聚一堂，共襄盛舉，會中播放紀念影片、發送紀念專刊，並展出歷史老照片，讓與會貴賓穿越時空，見證總臺從單一到多元，從人工作業邁入自動化、客製化及精緻化的進步歷程。

#### 8. 50th anniversary of ANWS ~ "Led by Safety, Fly with Happiness"

In order to celebrate the 50th anniversary of the establishment of ANWS, we have organized a series of tournaments, which includes inviting the MOTC and relative partners on air traffic service to participate in the Aviation Friendship Cup Slow Pitch Softball and Badminton Tournament in June 1st and September 22nd, 2019 respectively. Minister of MOTC, Lin, Chia-lung, Director General of CAA, Lin, Kuo-shian, Taiwan Transportation Safety Board, Aviation Police Bureau, Central Weather Bureau, the Air Force, airline companies and domestic and foreign cooperative companies, experts and scholars, retired officials from the ANWS and current colleagues are invited to participate "the 50th anniversary of ANWS tea party and photo exhibition" held in North ATS Park in August 30th, 2019. During the exhibition, memorial videos were played, special memorial issues were published, and old photos were displayed to allow guests to witness ANWS' changes to multiple services, automation, customization and refinement.



50 週年紀念專刊  
50th Anniversary Special Issue



慶祝茶會 - 合切蛋糕  
Celebratory Reception - Cake-cutting ceremony



慶祝茶會 - 部長參觀回顧照片展  
Celebratory Reception - The minister visits the old photo exhibition





第 12 屆非正式東亞飛航管制小組會議  
Organization of 12th East Asia Air Traffic Management Coordination Group Meeting

## 九、交流與合作

### (一) 國際交流與研討

- 108 年 1 月 16-18 日赴英國參加「塔臺模擬機系統建置」工廠測試，藉由原廠工程師展示實機系統、互動討論，深入瞭解系統作業與功能特性，俾利後續訓練與建置之進行。
- 108 年 3 月 9-15 日赴西班牙參加「航空管理系統世界博覽會」，瞭解歐洲各國為解決航管問題所遭遇的困難，做為精進本區航管作業之參考。
- 108 年 5 月 21-24 日汪副總臺長美惠率本總臺相關人員赴日本福岡參與「民用飛航服務組織 CANSO 亞太區年會暨工作小組會議」，並於會議上分享本總臺「強化改變管理」之作為。
- 108 年 8 月 14-16 日於臺北 101 會議室舉行第 12 屆非正式東亞飛航管制協調小組會議，會中與香港、日本、韓國及菲律賓各方代表進行討論及協商，提升東亞飛航管制作業間之合作，使飛航管制更流暢及安全。
- 108 年 8 月 20-23 日赴日本執行航空氣象資料技術協調會議及瞭解國際航空氣象報文新格式 (IWXXM) 作業狀況，瞭解日本地區相關作業系統的推動現況及未來規劃，做為精進本區飛航服務之參考。
- 108 年 10 月 21-25 日赴韓國仁川區域管制中心進行國際會議及參訪交流，藉由認識各國作業現況及特性，做為精進規劃本區飛航流量管理系統之參考。
- 108 年 11 月 4-7 日赴馬尼拉區域管制中心進行航管作業協調，瞭解飛航流量管理相關系統發展趨勢，做為精進期能爭取資源，設置專責流量管理單位，以利接軌國際。
- 108 年 12 月 4-5 日赴越南河內參加「CANSO 亞太區飛航作業暨飛航安全工作小組會議」，會中除瞭解亞太區飛航服務最新現況外，亦分享性能導航、飛航服務單位間數據通信、跑道安全及流量管理等議題。

## 9. Exchange and Collaboration

### I. International exchange and seminars

- From January 16th to 18th, 2019, ANWS staff members participated in the "Tower Simulator Construction" factory test in the UK. Through demonstrations of the actual machine and interactive discussions with factory engineers, a deeper understanding on systems operation and functional characteristics was achieved, benefiting subsequent training and construction.
- From March 9th to 15th, 2019, ANWS representatives attended the "World ATM Congress" in Spain to find how European countries solving the difficulties they are facing in air traffic control, which will serve as reference for improving the air traffic control in Taipei FIR.
- From May 21st to 24th, 2019, ANWS Deputy Director, Wang, Mei-hui led the relevant staff members to attend the Civil Air Navigation Services Organisation(CANSO) Asia-Pacific Workgroup Meeting in Fukuoka, Japan, to share ANWS's experience in "Strengthening Change Management".
- ANWS held the 12th East Asia Air Traffic Management Coordination Group Meeting in the Taipei 101 conference room from August 14th to 16th, 2019. The discussion with representatives from Hong Kong, Japan, South Korea and Philippines lead to a closer cooperation in East Asian, building a smoother and safer air traffic control operation.
- ANWS staff members attended "Japan Aviation Weather Information Technical Coordination Meeting" in Japan from August 20th to 23rd, 2019 to understand current conditions of related operating systems and future planning. These will serve as reference for improving our air traffic services.
- ANWS representatives visited Incheon Area Control Center in South Korea from October 21st to 25th, 2019. By exchanging the current operating conditions and features of each country, it will serve as reference for improving our air traffic flow management system planning.
- ANWS representatives visited Manila Area Control Center from November 4th to 7th, 2019. By communicating on air traffic control operations, and the developing trends of air traffic flow management systems, we hope to gain resources and keep in line with global standards by setting up a dedicated unit for air traffic flow management.
- ANWS staff members attended the "CANSO Asia-Pacific Air Traffic Operations and Safety Work Group Meeting" in Hanoi from December 4th to 5th, 2019. ANWS representatives not only learned about the latest status of air traffic services in the Asia-Pacific region, but also shared in the meeting about performance based navigation, ATS Inter-facility Data Communication (AIDC), runway safety, and air traffic flow management.



赴日參加航空氣象資料技術協調會議，拜會鳥取縣國土整備部部長。  
Visit to the minister of National Land Planning in Tottori Prefecture Participation during the Aviation Weather Information Technical Coordination Meeting in Japan



赴越南河內參加 CANSO 亞太區安全工作小組會議  
Participation in CANSO Asia-Pacific Air Traffic Operations and Safety Work Group Meeting in Hanoi, Vietnam





## (二) 國內交流與合作

### ■ 加強與航空公司意見交流

- 108 年 10 月 14、16、18 日分別於桃園機場、本總臺及高雄機場辦理 3 梯次「航空情報服務網 (AES) 使用者訓練」，共 92 人參加，會中宣導 AES 新增功能、無紙化政策及定期更新密碼等規定，並進行飛航諮詢服務意見交流。
- 108 年 11 月 28 日參與中華航空協會舉辦之「2019 顯著危害天氣與飛航作業研討會」，共約 110 人參加，與產、官、學、研相關單位共同分享及研討梅雨天氣作業與研究心得，持續提升本區之飛航服務品質。
- 108 年 12 月 3、5、10 及 12 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、作業觀摩及直昇機專區訓練等方式進行，共 82 人參訓，增進使用者對航空氣象服務網之瞭解。
- 另與中華航空公司、長榮航空公司及星宇航空公司人員進行參訪交流，瞭解各項飛航服務作業概況，並進行意見溝通，有利雙方業務推展。

### ■ 強化與軍方業務協調

- 108 年 10 月 24 日起至 12 月 5 日辦理 11 梯次「戰航管巡迴研習」，針對無線電使用原則進行宣導，另就日常實務作業進行面對面意見交流與溝通。
- 因應軍方演訓及軍民航機管制，與軍方共召開 19 次會議，研討雙方協調機制，並完成雙方 4 份協議書修正，增進軍民航作業安全。
- 另與空中勤務總隊第三大隊、空軍氣象聯隊、空軍第七通信航管資訊中隊及空軍戰術管制中心進行參訪交流，並就相關作業程序進行面對面溝通，有助雙方日常實務作業之進行。



空軍戰術管制中心參訪  
The Air Force Operational Control Center visits North ATS Park



2019 顯著危害天氣研討會  
2019 Significant Weather and Aviation Operation Seminar

## II. Domestic exchanges and cooperation

### ■ Enhanced communication with Airlines

- Three sessions of "AES User Training" were held at Taoyuan Airport, ANWS head office, and Kaohsiung Airport on October 14th, 16th and 18th, 2019, respectively, with a total of 92 participants. During the training sessions, participants were provided with new functions of the AES, the paperless policy and provisions on regular password updates, and underwent opinion exchange on flight information services.
- On November 28th, 2019, ANWS staff members attended the "2019 Significant Weather and Aviation Operation Seminar" which had around 110 participants in total, hosted by the Chinese Aeronautical Meteorological Association. During the seminar, the operation and research experience of the rainy seasons were shared and discussed with relevant industries, the government, academic and research institutions to improve quality of our air traffic services continuously.
- Four sessions of "AMSP User Training" were held on December 3rd, 5th, 10th and 12th, 2019 respectively, with respective content of basic training, advanced training, operational observation and helicopter area training. A total of 82 participants took part in the training to understand the functions of AMSP.
- Staff from China Airlines, EVA Air, and Starlux Airlines visited ANWS, and engaged in exchanges of opinions on various air traffic service operations, which is beneficial for the business development of both parties.

### ■ Strengthening coordination with Military Authorities

- From October 24th to December 5th, 2019, 11 sessions of Workshops between Military and Civil Air Traffic Controller was conducted to advocate on the rules of radio communication. We underwent opinion exchange, and communicated face-to-face on daily operation issues.
- In order to address ATC operations for both civil and military aircraft during the Armed Forces' military exercises, a total of 19 meetings were held with military agencies. 4 agreements were amended to ensure all military exercises were conducted smoothly and safely.
- In addition, we visited the NASC 3rd Wing, the Air Force Weather Wing, the 7th Air Communications Squadron and the Air Force Operational Control Center for exchanges, and communicated face-to-face on relevant operating procedures to facilitate daily operations of both parties.



### (三) 協助媒體及教育單位

協助外交部、北市立文獻館及國語日報拍攝宣導短片與管制員職業專訪相關報導、協助南湖高中學生對管制員進行職業訪談，另支援開南大學協助新北市辦理「英語體驗營」，介紹飛航服務及說明英語在飛航管制之重要性。

### (四) 提供參訪服務

接受國內外相關單位參訪，共計 87 梯次 1,711 人次。國外單位計有來自日本、韓國、香港、新加坡、馬來西亞、紐西蘭、卡達及挪威等，計 11 梯次 148 人次；國內重要單位計有交通部會計處、內政部警政署航空警察局、空軍區域作戰指揮中心及戰術管制聯隊等，計 76 梯次 1,563 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。

### III. Assisting the media and educational institutions

Assisting the Ministry of Foreign Affairs, Taipei City Archives and Mandarin Daily News in filming promotional videos and interviewing air traffic controllers, helping Nanhua high school students in interviewing air traffic controllers, and assisting Kainan University for organizing the "English Experience Camp" in cooperation with New Taipei City to introduce air traffic services and the importance of English in air traffic control.

### IV. Facility visits

ANWS hosted several visits to ANWS by various organizations. 87 visits were held in total with 1,711 participants. 11 visits from overseas, including Japan, South Korea, Hong Kong, Singapore, Malaysia, New Zealand, Qatar and Norway, were held in total of 148 participants; 76 visits from major domestic organizations, including the Department of Accounting of the Ministry of Transportation and Communications, Aviation Police Bureau of the National Police Agency of Ministry of the Interior Agency, Joint Air Operation Center and Air Tactical Control Wing, in total of 1,563 participants. These helped domestic and foreign representatives to understand ANWS's work, and facilitated operating coordination and exchanges.

## 十、訓練、演練及席位查核

### (一) 國外訓練

本年度共執行協同決策與飛航流量管理研習課程、航管督導管理研習課程、空中航行服務安全查核檢查員訓練課程、汰換航管數位語音交換系統 (DVCSS) 案國外原廠訓練、汰換臺北飛航情報區儀降系統案國外訓練以及汰換後龍、綠島、恆春及西港 VOR/DME 設備案出國訓練等 6 項，計 15 人次。

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

### I. Overseas training

In 2019, 6 different training programs were held, including Coordinated Decision-Making and Air Traffic Flow Management training, Air Traffic Control Watch Managers (Supervisor) training, and Safety Oversight Inspectors training, Air Traffic Control Digital Voice Communication Switch System (DVCSS) Project overseas training, Taipei FIR ILS Replacement Project overseas training, and Houlong, Ludao, Hengchun and Xigang VOR/DME Replacement Project overseas training, with a total of 15 participants.



結訓證書  
Training Completion Certificate



國外訓練 - 汰換後龍、綠島、恆春及西港 VOR 設備  
Overseas training - Houlong, Ludao, Hengchun and Xigang VOR replacement





360 度塔臺模擬機訓練  
360-degree tower simulator training

## (二) 國內訓練

- 專業訓練：飛航管制類 10 項，合計 140 梯次，共 1,253 人次；飛航情報類 5 項，合計 14 梯次，共 87 人次；航空氣象類 7 項，合計 34 梯次，共 328 人次；航空通信類 7 項，合計 10 梯次，共 58 人次；航空電子類（含資訊管理）26 項，合計 75 梯次，共 1,315 人次。
- 行政智能訓練：國際人權公約、性騷擾防治與處理、全民國防教育在職巡迴宣導、消防災害防範訓練、操之在己的職涯生活等 17 項課程，合計 21 梯次，共 1,289 人次。

## (三) 緊急應變演練

- 108 年 6 月 13 日辦理「108 年度航空器失事或重大意外事件通報及資料整備演練」，共 21 人次。
- 108 年 7 月 23 日辦理臺北飛航情報中心所屬高雄飛航諮詢臺業務持續運作演練，共 9 人次。
- 108 年 12 月 2 日辦理飛航管理自動化系統持續運作高司演練，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共 28 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）共 29 梯次，302 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共 36 梯次，259 人次。

## (四) 席位查核

為使飛航服務更臻完善，確保同仁適職性，提高各類人員技術水準，席位查核共完成飛航管制（含航管模擬機）891 人次、飛航情報 38 人次、航空氣象 72 人次、航空通信 14 人次、航空電子（含資訊管理）229 人次。

## II. Domestic training

- Professional trainings : 10 categories of ATC Training in total of 140 sessions with 1,253 participants; 5 categories of Flight Information Training in total of 14 sessions with 87 participants; 7 categories of Aeronautical Meteorological Training in total of 34 sessions with 328 participants; 7 categories of Aeronautical Telecommunication Training in total of 10 sessions with 58 participants; 26 categories of Aeronautical Electronics Training (including Information management) in total of 75 sessions with 1,315 participants.
- Administrative Skills Training : 17 courses were organized, including course on International Bill of Human Rights, sexual harassment prevention, on-the-job national defense education tour and campaign, fire disaster prevention training, and career life management courses, with a total of 21 sessions and 1,289 participants.

## III. Emergency response drills

- "2019 Aircraft Crash or Critical Accident Reporting and Information Preparation Drill" was held on June 13th, 2019 with 21 participants.
- Kaohsiung Flight Information Station business continuity drill was held on July 23rd, 2019, with 9 participants.
- Operational business continuity command post drill for Air Traffic Management Automation System was conducted on December 2nd, 2019 with 17 participants.
- Air Traffic Controllers were required to participate in the Contingency Operations Drill in each tower. There were 28 sessions held in total of 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, handling weather reports on behalf of other units, various types of meteorological equipment failures, and meteorological personnel supporting air traffic control operation) were held in a total of 29 sessions with 302 participants.
- There were 30 staff taking part in 9 different kinds of aeronautical telecommunication contingency drills in 2019. (including ATMS continuous operation planning, system upgrading and AMHS remote contingency operation)
- 36 sessions of drill for Navigational aids equipment failure and unlawful interference were held for aeronautical electronics personnel with 259 participants.

## IV. On-job competency assessment

To provide high quality air traffic services and ensure the competency of personnel in different categories of professionalism, ANWS completed on-job competency assessment for 891 ATCs (including conducted under simulated environment), 38 flight information personnel, 72 aeronautical meteorology personnel, 14 aeronautical telecommunication personnel, and 229 aeronautical electronics personnel (including information management personnel).





服務展翼高飛  
Excellent Air Traffic Services

## 一、飛航管制 Air Traffic Control

### 總管制架次 Total Flight Movements

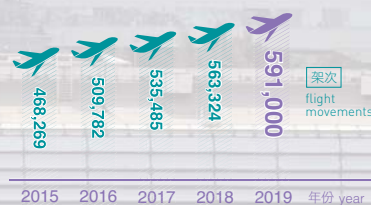


108 年總管制架次為 1,850,460 架次，較 107 年

增加約 **5.32%**

Total number of controlled flight movements in 2019 was 1,850,460, a **5.32%** increase compared with 2018.

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



108 年航路管制架次為 591,000 架次，較 107 年

增加約 **4.91%**

The number of en-route flight movements in 2019 was 591,000, a **4.91%** increase compared with 2018.

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

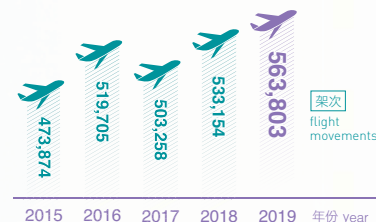


108 年近場管制架次為 695,657 架次，較

107 年增加約 **5.33%**

The number of approach control flight movements in 2019 was 695,657, a **5.33%** increase compared with 2018.

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



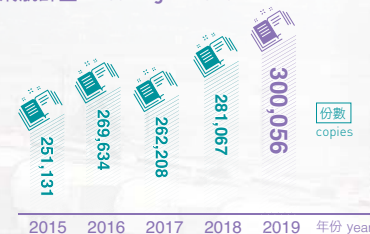
108 年機場管制架次為 563,803 架次，較

107 年增加約 **5.75%**

The number of aerodrome control flight movements in 2019 was 563,803, a **5.75%** increase compared with 2018.

## 二、飛航情報 Flight Information

### 處理飛航計畫 Filed Flight Plans

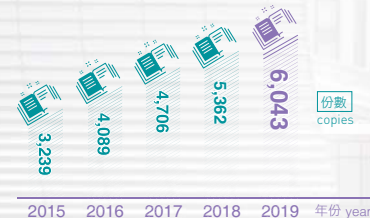


108 年處理飛航計畫 300,056 份，較 107

年增加約 **6.76%**

The number of flight plans processed in 2019 was 300,056, a **6.76%** increase compared with 2018.

### 發布本區飛航公告 Notice to Airmen



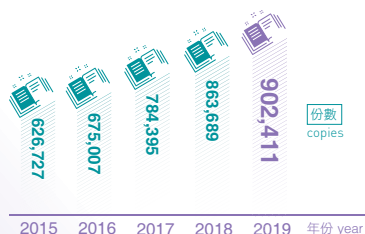
108 年發布本區飛航公告 6,043 份，較

107 年增加約 **12.70%**

The number of NOTAMs issued by Taipei FIR in 2019 was 6,043, a **12.70%** increase compared with 2018.



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



108 年處理他區飛航公告 902,411 份，較

107 年增加約 **4.48%**The number of NOTAMs from other regions processed in 2019 was 902,411, a **4.48%** increase compared with 2018.

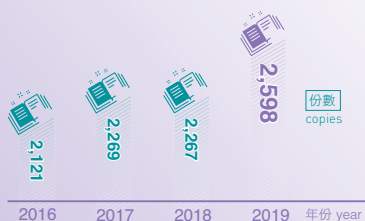
## 提供飛航文件 Flight Documents



108 年提供飛航文件 42,811 份，較 107

年減少約 **8.99%**The number of flight documents provided in 2019 was 42,811, an **8.99%** decrease compared with 2018.

## 標示機場場面飛航公告 Aerodrome NOTAM Display

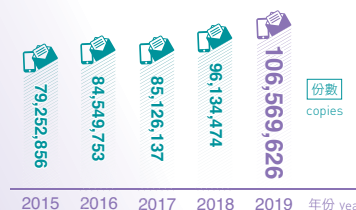


108 年標示機場場面飛航公告 2,598 份，

較 107 年增加約 **14.60%**In total 2,598 NOTAMs were marked on aerodrome charts in 2019, a **14.60%** increase compared with 2018.

## 三、航空通信 Aeronautical Telecommunication

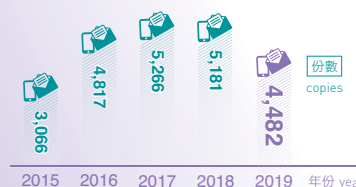
## 航空固定通信報量 Aeronautical Fixed Telecommunication Service messages



108 年航空固定通信報量為 106,569,626 份，

較 107 年增加約 **10.85%**The total amount of aeronautical fixed telecommunication service messages handling in 2019 was 106,569,626, a **10.85%** increase compared with 2018.

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



108 年航空行動通信報量為 4,482 份，較

107 年減少約 **13.49%**The total amount of aeronautical mobile telecommunication service messages handling in 2019 was 4,482, a **13.49%** decrease compared with 2018.

## 四、航空氣象 Aeronautical Meteorology

108 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 2019.

業務類別 Category	工作項目 Items	工作成果 Results				
		104 年 2015	105 年 2016	106 年 2017	107 年 2018	108 年 2019
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)	120,126	112,432	107,878	105,564	<b>107,131</b>
	局屬民航機場天氣報告 CAA Civil Airport Weather Report	122,979	115,157	111,019	108,851	<b>110,405</b>
	民航機場趨勢預報 Civil Airport Trend Forecast	104,924	107,689	107,346	105,567	<b>107,335</b>
	民航機場天氣警報 Civil Airport Weather Warning	165	250	176	150	<b>217</b>
	民航機場低空風切警報 Civil Airport Low Level Wind Shear Warning	698	1,028	974	855	<b>915</b>
	桃園機場氣象雷達觀測（註 2） Taiwan Taoyuan International Airport Weather Radar Observation (Note 2)	85,152	96,487	93,261	83,573	<b>83,244</b>
	合計 Sub-total	434,044	433,043	420,654	404,560	<b>409,247</b>



業務類別 Category	工作項目 Items	工作成果 Results				
		104 年 2015	105 年 2016	106 年 2017	107 年 2018	108 年 2019
航路預報 Route Forecasts	各種分析天氣圖表 Various Analytical Weather Charts	41,109	41,183	41,093	40,908	<b>40,476</b>
	高空風溫度預報圖 High Altitude Wind Temperature Forecast Chart	30,883	30,741	30,195	27,719	<b>43,306</b>
	顯著天氣預報圖 Significant Weather Forecast Chart	5,840	5,856	5,842	5,840	<b>5,840</b>
	合計 Sub-total	<b>77,832</b>	<b>77,780</b>	<b>77,130</b>	<b>74,467</b>	<b>89,622</b>
機場預報 Terminal Aerodrome Forecasts	編發機場預報 Issuing Terminal Aerodrome Forecast(TAF)	16,212	15,152	16,344	16,351	<b>16,361</b>
	機場預報修正 TAF AMD TAF Revision(TAF AMD)	454	496	355	370	<b>643</b>
	合計 Sub-total	<b>16,666</b>	<b>15,648</b>	<b>16,699</b>	<b>16,721</b>	<b>17,004</b>
天氣守視 Weather Watches	顯著天氣資訊 Significant Weather Information	1,471	1,874	1,372	1,402	<b>1,661</b>
	飛機報告 Aircraft Report	600	609	554	495	<b>477</b>
	本區機場天氣報告 Regional Airport Weather Report	134,204	135,532	145,420	145,362	<b>342,314</b>
	AMHS 氣象電報 AMHS Weather Dispatch	5,787,617	6,108,760	6,705,328	7,206,573	<b>8,579,941</b>
	短時預報 Short-term Forecast	1,464	1,464	1,460	1,460	<b>1,460</b>
	天氣影像圖 (註 3) Weather Graphics (Note3)	576,173	784,005	1,237,968	1,238,208	<b>1,285,585</b>
	民航機場颱風警報 Civil Airport Typhoon Warning	311	315	341	415	<b>234</b>
	合計 Sub-total	<b>6,501,840</b>	<b>7,032,559</b>	<b>8,092,443</b>	<b>8,593,915</b>	<b>10,211,672</b>
總計 Total		<b>7,030,382</b>	<b>7,559,030</b>	<b>8,606,926</b>	<b>9,089,663</b>	<b>10,727,545</b>

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)。

Note1：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。

Note2：The Taoyuan Doppler weather radar was shut down from August 22nd to September 12th, 2018 for transmitter replacement.

註 3：105 年 9 月起介接日本向日葵八號高解析度衛星資料。

Note3：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	104 年 2015	105 年 2016	106 年 2017	107 年 2018	108 年 2019
雷達設備妥善率 Radar Equipment Availability		99.9920%	99.9879%	99.9915%	99.9935%	<b>99.9960%</b>
助航設備妥善率 Navigation Aid Equipment Availability		99.9853%	99.9395%	99.9989%	99.9892%	<b>99.9956%</b>

## 六、其他飛航服務系統妥善率

### Availability of Other Air Traffic Service Systems

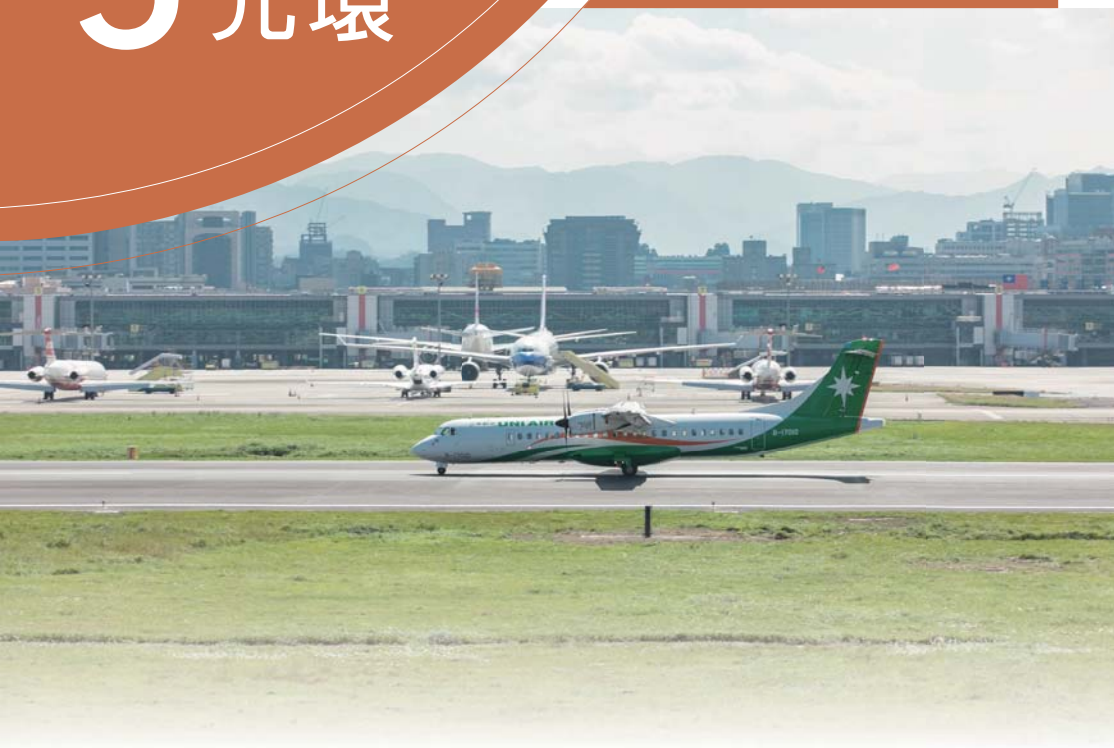
系統別 System	年度 Year	104 年 2015	105 年 2016	106 年 2017	107 年 2018	108 年 2019
飛航管理系統 ATMS Air Traffic Management System(ATMS)		99.9938%	99.9963%	100%	99.9967%	<b>100%</b>
航空情報服務系統 AISS Aeronautical Information Service System(AISS)		99.9748%	99.8951%	99.9840%	99.9928%	<b>99.9939%</b>
飛航訊息處理系統 AMHS Air Traffic Services Messages Handling System(AMHS)		99.9941%	99.9583%	99.9949%	99.9911%	<b>99.9943%</b>
航空氣象服務網 AMSP Aeronautical Meteorological Services Page(AMSP)		99.90%	99.9333%	100%	100%	<b>99.99%</b>
數位語音交換系統 DVCSS Digital Voice Communication Switching System(DVCSS)		100%	100%	100%	100%	<b>100%</b>
飛航服務業務網路 ASN ATS Service Network(ASN)		99.994%	99.999%	99.98%	100%	<b>100%</b>
行政網路 OAN Office Administration Network(OAN)		100%	99.979%	100%	100%	<b>100%</b>



# 5 收入支出— 光環

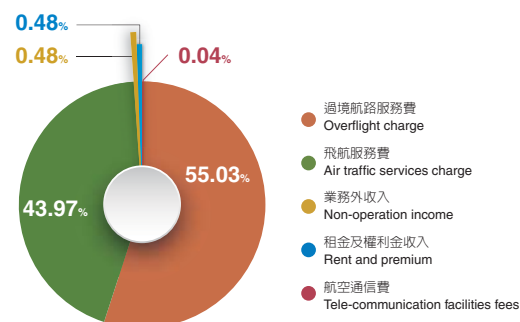


航運圓滿達成  
Accomplishments



## 一、收入 Revenue

年度 Year	收入 Revenue
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
108 年 /2019	4,391,894,134 元 / TWD

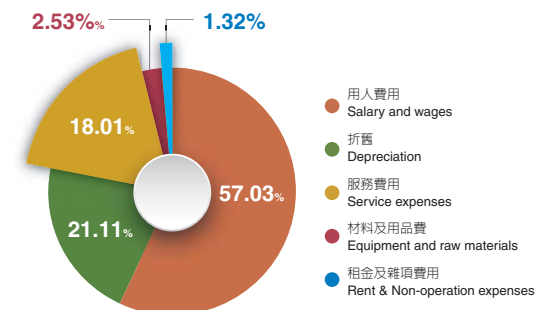


註：108 年度總收入 4,391,894,134 元，較 107 年度增加約 **5.36%**

Note : 2019 total revenue : 4,391,894,134 TWD , a **5.36 %** increase compared with 2018.

## 二、支出 Expenditure

年度 Year	支出 Expenditure
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
108 年 /2019	2,335,885,413 元 / TWD



註：108 年度總支出為 2,335,885,413 元，較 107 年度增加約 **1.90%**

Note : 2019 total expenditure : 2,335,885,413 TWD , a **1.90 %** increase compared with 2018.

## 三、盈餘 Surplus

108 年度作業科目 Current expenditures details for 2019	收入 Revenue	支出 Expenditure
過境航路服務費 Overflight charge	2,417,070,000	
飛航服務費 Air traffic services charge	1,931,008,933	
租金及權利金收入 Rent and premium	21,106,321	
業務外收入 Non-operation income	21,098,413	
航空通信費 Tele-communication facilities fees	1,570,500	
停車費 Parking fees	39,967	
用人費用 Salary and wages		1,332,241,869
折舊 Depreciation		493,134,785
服務費用 Service expenses		420,772,204
材料及用品費 Equipment and raw materials		59,207,715
租金、償債與利息 Rent, debt repayment and interest expenses		9,378,805
稅捐與規費 Tax and charges		7,959,359
會費、捐助、補助、分攤與交流活動費 Membership fees, donations, reimbursements, shared costs and public relations expenses		1,507,104
業務外費用 Non-operation expenses		11,681,572
( \$ ) 合計 Total	4,391,894,134	2,335,883,413

盈餘 Surplus **2,056,010,721 元** ✈️

註：108 年度盈餘 2,056,010,721 元，較 107 年度增加約 **9.58%**

Note : 2019 budget surplus : 2,056,010,721 TWD , a **9.58 %** increase compared with 2018.



## 一、持續完善安全管理系統，提升飛航服務安全水準

- 廣續推動安全管理系統、落實安全風險管理、監控各項關鍵績效指標、檢視安全政策與目標，精進安全控管作為，型塑組織安全文化。
- 規劃建置總臺重要設施維護管理系統，提供各項設施標準化檢查維護流程及資料查詢，提升維管工作效率及縮短維護時效。

## 二、推動通訊、導航、監視設備及相關飛航服務系統汰新，優化飛航服務能量

- 持續辦理汰換臺北飛航情報區儀器降落系統、VOR/DME 與歸航臺及測距儀設備，提升進場及航路導航設備之可靠度與穩定性。
- 廣續辦理汰換鵝鑾鼻、三貂角等 2 座長程航路雷達與松山、花蓮及臺東 3 座終端航管雷達案，確保監視設備妥善率及穩定度。
- 廣續辦理飛航管理自動化系統及數位語音交換系統期中升級案，增進系統設備穩定性與安全性，確保飛航安全。

## 1. Continuously improving Safety Management System (SMS) to enhance safety standard of air traffic services

- Continue to promote SMS, implement safety risk management, monitoring of KPIs, review safety policies and objectives, refinement of safety control and management, and building of organizational safety culture.
- Planning and setting up the maintenance management system for ANWS's major facilities, and providing standardized inspection and maintenance procedures as well as data search for various facilities in order for more effectiveness in management and shorten maintenance time.

## 2. Promoting the renovation of CNS/ATM related equipment and systems to optimize air traffic service capabilities

- Continue to carry out the Taipei FIR replacement project of ILS, VOR/DME, NDB and DME to improve the reliability and stability of air navigational aids.
- Continue to replace two long range radars at Eluanbi and Sandiaojiao, and three terminal ATC radars at Songshan, Hualien and Taitung, ensuring system availability and stability of surveillance equipments.
- Continue to upgrade the Air Traffic Control Automation System and Digital Voice Communication Switch System (DVCSS) for reliability and stability enhancement, ensuring of aviation safety.







### 三、重視回應使用者需求，精進飛航服務作為

- 加強與民航業者及軍方等單位溝通互動，並強化航空情報服務網與航空氣象服務網功能，透過辦理使用者訓練及會議，以提供符合需求、精緻化且客製化之服務。
- 持續辦理相關滿意度調查，瞭解顧客需求，據以精進。

### 四、持續瞭解關注國際趨勢，確保飛航服務水準接軌國際

- 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（the East Asia Air Traffic Management Coordination Group, EATMCG）等相關會議，瞭解區域發展最新現況，同時積極掌握國際民航組織（International Civil Aviation Organization, ICAO）之最新政策與趨勢。
- 持續關注國際民航組織之全球空中航行計畫（Global Air Navigation Plan, GANP）與飛航系統提升（Aviation System Block Upgrades, ASBU）之進程，藉由與其他國家交流機會，瞭解相關技術發展與作業實務，確保本區飛航服務作業與國際接軌，並適時規劃建置本區新世代之飛航管理系統。
- 依循最新國際民航組織規範及建議作法，規劃新一代航空氣象服務系統、航空情報服務系統、新增航空氣象資訊交換模式（IWXXM）電報等，確保本區飛航服務作業符合國際發展趨勢。
- 積極導入機場協同合作（Airport CDM）、區域流量管理（Regional ATFM）、系統廣泛資訊管理（System Wide Information Management, SWIM）等協同合作與資訊共享機制，與地勤、航空公司、機場、鄰區協同合作，透過資料共享與交換，共同提升運作效能及強化飛航安全。

### 3. Focus on responses to user needs and improve air traffic services

- Strengthening of interactions and communication between ANWS and civil aviation operators, and military units as well. Through enhancement of the functions of the Aeronautical E-Service (AES) and Aeronautical Meteorological Service Page (AMSP), and organizing of user training and relevant meetings to ensure the provision of sophisticated and customized services in line with user needs.
- Carrying out of satisfaction surveys to gain a better understanding of customer demands as the basis for constant improvements and advancements.

### 4. Constant monitoring and analysis of international trends to bring local air traffic services in sync with international standards

- 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 developments and actively keep track of new trends and plans from the International Civil Aviation Organization (ICAO).
- Continue to keep a close watch on the progress of ICAO's Global Air Navigation Plan (GANP) and Aviation System Block Upgrades (ASBU). Through technical exchange with other countries and aviation related international conferences, acquire information on the development of ATS technology and ATS operations, so that the ANWS operations, facilities and regulations are in line with global aviation planning and standards. Plan ahead to implement a new generation of air traffic management system to cater to the need of Taipei FIR.
- Keep close attention to the latest ICAO regulations and recommendations, plan the next generation aeronautical meteorological service system, aeronautical information service system, set up the ICAO Meteorological Information Exchange Model, so that the ANWS operations are in line with global aviation development trends.
- Active adoption of collaboration and information sharing mechanisms such as Airport Collaborative Decision-Making (Airport CDM), Regional Air Traffic Flow Management (Regional ATFM), and System Wide Information Management (SWIM) – The goal lies in enhancement of operational effectiveness and air traffic safety through data sharing and exchanges in collaboration with ground service providers, airlines, airports, and neighboring communities.





# 7 大事紀要— 光陰



共享經緯記事  
Milestones



01/29-30



飛航安全·世界一流  
飛航服務·顧客滿意

A World Class Air Navigation Services Provider  
in the Asia Pacific Region

02/12

## 1 月 JAN

- 01/01** 財產管理系統正式啓用，提高行政作業效率及正確性，提升總臺服務品質。  
The Property Management System has been launched, improving the efficiency, accuracy and quality of administration.
- 01/22-23** 林局長國顯、何副局長淑萍及方副局長志文視察大屯山、三貂角及馬祖地區，聽取業務重點工作報告，並發放春節慰問金。  
Director General of CAA, Lin, Kuo-shian, Deputy Director General of CAA, Ho, Shu-ping and Fang, Chih-wen visited Datunshan, Sandiaojiao Radar Site and Matsu area, distributed Chinese New Year subsidies and listened to the related business presentation.
- 01/29** 交通部祁常務次長文中在交通部及民航局幕僚陪同下，視察桃園國際機場塔臺聽取春節空中疏運準備作業，並發放春節慰問金。  
Administrative Deputy Minister of MOTC, Chi, Wen-jong accompanied by staff from MOTC and CAA visited taoyuan international airport control tower, distributed Chinese New Year subsidies, and listened to the presentation about air traffic dispersion plans during the Chinese New Year holidays.
- 01/29-30** 何副局長淑萍在黃總臺長麗君陪同下，視察恆春助航臺及南部飛航服務園區，並發放春節慰問金。  
Deputy Director General of CAA, Ho, Shu-ping accompanied by Director of ANWS, Huang, Li-chun visited Hengchun Navids Site and South ATS Park, and distributed Chinese New Year subsidies.
- 01/30** 林局長國顯在蔡副總臺長宗穎陪同下，視察桃園地區聽取春節空中疏運準備作業，並發放春節慰問金。  
Director General of CAA, Lin, Kuo-shian accompanied by Deputy Director of ANWS, Tsai, Tsung-ying visited taoyuan area, distributed Chinese New Year subsidies, and listened to the presentation about air traffic dispersion plans during the Chinese New Year holidays.

## 2 月 FEB

- 02/01** 交通部王政務次長國材在林副總臺長嘉明陪同下，視察總臺三貂角雷達臺並慰問同仁辛勞。  
Political Deputy Minister of MOTC, Wang, Kwo-tsai accompanied by Deputy Director of ANWS, Lin, Chia-ming visited Sandiaojiao Radar Site.
- 02/01** 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 Director of ANWS, Huang, Li-chun visited ANWS Binjiang area and distributed Chinese New Year subsidies.
- 02/12** 總臺官網改版正式上線，以自適應網頁設計技術，打造行動友善的網站。  
The new website of ANWS has been launched. The new website designed with RWD provides friendly website services.

## 3 月 MAR

- 03/08** 108 年北部春節聯誼會於台北國軍英雄館舉行，共計 190 人參加。  
The 2019 northern area annual retiree banquet was held in Taipei Hero House, there were total 190 retiree seniors presented.
- 03/15** 108 年南部春節聯誼會於高雄國際會館舉行，共計 46 人參加。  
The 2019 southern area annual retiree banquet was held in Kaohsiung International Plaza, there were total 46 retiree seniors presented.
- 03/19** 交通部人事處處長英良率相關同仁，在民航局楊主任秘書國峯及黃總臺長麗君陪同下，至本總臺辦理精進員工協助方案輔導訪視座談會。  
Director of Department of Personnel, MOTC, Cai, Ying-liang accompanied by Chief Secretary of CAA, Yang, Gwo-feng and Director of ANWS, Huang, Li-chun led staffs to visit ANWS for employee assistance programs forum.



06/01



09/17

## 4 月 APR

04/15

中華民國飛航管制員協會率來自日本、香港、新加坡、紐西蘭等國之管制員參訪北部飛航服務園區，以瞭解本區之飛航管制作業。

Air traffic controllers from Japan, Hong Kong, Singapore, South Korea, Malaysia, and New Zealand, invited by Republic of China Air Traffic Controllers' Association (ROCATCA), visit the North ATS Park to gain more understanding of the air traffic control services in Taipei FIR.

## 5 月 MAY

05/21-24

汪副總臺長美惠率本總臺相關人員赴日本福岡參與 CANSO 亞太區年會暨工作小組會議，並於會議上分享本總臺強化改變管理之作為。

5 representatives from ANWS attended the "CANSO Asia Pacific Conference and Working Groups" which was held in Fukuoka, Japan. ANWS shared the "Improvement of Change Management" at the safety working group.

## 6 月 JUN

06/01

舉辦總臺 50 週年飛航友誼盃慢速壘球賽，共計 202 人參加。  
Hosted 2019 Slow Pitch Softball Tournament, with a total of 202 participants.

06/18

完成松山機場 10 跑道端西側進場燈光區新設圍籬工程。  
Fence installation of Songshan Airport's runway 10 was completed.

06/30

完成濱江地區運動休息室，提供同仁從事健康之體能活動。  
Sports lounge in Binjiang area was completed, providing various physical activities for colleagues.

## 8 月 AUG

08/12

民航局秘書室郭主任忠華一行 4 人至本總臺進行 108 年度公文檢核實地訪查。  
Director of Secretariat Office, CAA, Kuo, Zhong-hua led 3 staffs to visit ANWS for Document inspection.

08/28

榮獲民航局國有財產管理及運用效益方案績效考核第 1 名。  
ANWS received the first place honor of "Evaluation of National Property Control and Performance" from CAA.

08/30

於北部飛航服務園區舉辦總臺 50 週年臺慶茶會暨回顧照片展，交通部林部長佳龍蒞臨致詞，除了感謝同仁的努力與付出，並參觀回顧照片展，見證總臺從單一到多元，從人工作業邁入自動化、高科技作業及客製化、精緻化的進步歷程。  
Minister of MOTC, Lin, Chia-lung hosted "the 50th anniversary of ANWS tea party and photo exhibition" held in North ATS Park. Minister Lin thanked all the retired seniors and current colleagues of ANWS for their dedicated contribution to flight services and visited the photo exhibition to see ANWS' changes.

## 9 月 SEP

09/06

榮獲民航局 108 年公文績效檢核第 2 名。  
ANWS received the second place honor of "Evaluation of Document Performance" from CAA.

09/17-18

卡達民航局一行 8 人參訪北部飛航服務園區及 360 度塔臺模擬機，增進對本區飛航管制作業之瞭解。  
A group of 8 from Qatar CAA visited North ATS Park and the 360 Tower Simulator to gain more understanding of air traffic control services.





11/12



11/18

09/18

民航局企劃組王副組長志青一行 9 人至本總臺進行 108 年度為民服務績效實地評鑑。  
Deputy Director of Planning Division, CAA, Wang, Zhi-qing led 8 staffs to visit ANWS for 2019 Citizen-Service Assessment.

09/22

舉辦總臺 50 週年飛航友誼盃羽球賽，由交通部王政務次長國材致詞開場，共計 128 人參加。  
Hosted the 50th anniversary of ANWS Badminton Match, and Political Deputy Minister of MOTC, Wang, Kwo-tsai gave an open speech. There were total 128 participants.

09/23

交通部黃政務次長玉霖在交通部及民航局各級主管陪同下，視察桃園機場塔臺園區新建工程及關切施工狀況。  
Political Deputy Minister of MOTC, Huang, Yu-lin, accompanied by staff from MOTC and CAA inspected the construction of Taoyuan Airport New Air Traffic Control Tower.



09/22



09/23

## 10 月 OCT

10/26

中華民國航空學會方理事長志文一行約 60 人參訪三貂角雷達臺，進一步瞭解雷達設備運作概況。  
Director of Chinese Society Of Civil Aviation, Fang, Chih-wen led 60 members to visit Sandiaoqiao Radar Site to understand the operation of radar site.

## 11 月 NOV

11/02

完成桃園國際機場塔臺暨整體園區新建辦公室裝修工程。  
Newly built and renovation of Taoyuan International Airport air traffic control tower and office complex was completed.

11/08

榮獲民航局 108 年為民服務績效定期評鑑第 2 名。  
ANWS received the second place honor of "Regular Evaluation of Service Performance" from CAA.

11/12

交通部記者會在本總臺桃園機場新塔臺園區舉辦，交通部林部長佳龍視察桃園機場新塔臺工程及系統轉移測試狀況，並帶領近 60 位媒體記者參觀新管制作業室及 360 度塔臺模擬機。  
The press conference of MOTC was held in Taoyuan Airport New Air Traffic Control Tower, Minister of MOTC, Lin, Chia-lung inspected Taoyuan Airport New Air Traffic Control Tower and the progress of operational test on new tower system. Over 60 journalists were invited to visit the new Air Traffic Control Tower and ATC Tower Simulator with 360° view.

11/14

交通部航政司葉司長協隆率隊假本總臺桃園機場新塔臺園區進行 108 年度飛安監理，並邀請委員參觀桃園機場新塔臺園區及塔臺自動化系統作業轉移情形。  
Director of Department of Navigation and Aviation, MOTC, Yeh, Hsieh-lung led members to visit Taoyuan Airport New Air Traffic Control Tower for flight safety supervision. The members were invited to visit Taoyuan Airport New Air Traffic Control Tower to understand the progress of operational test of Tower Automation System.

11/18

交通部常務次長文中在黃總臺長麗君陪同下視察桃園機場新塔臺園區，於新塔臺管制作業室及 360 度塔臺模擬機室聽取總臺介紹塔臺自動化系統及轉移執行情形，並肯定同仁的付出及努力。  
Administrative Deputy Minister of MOTC, Chi, Wen-jong accompanied by Director of ANWS, Huang, Li-chun visited Taoyuan Airport New Air Traffic Control Tower and ATC Tower Simulator with 360° view to understand the progress of operational test of Tower Automation System.





12/24



12/18

## 12 月 DEC

12/04

為強化各單位於執行改變前識別危害並落實風險管控，舉辦「改善改變管理成果發表會」，分享改變管理優良案例，供其他單位學習。

In order to promote change management, hazard identification and risk mitigation, ANWS hosted "The Change Management Improvement Results Presentation Contest". 4 units shared their excellent and complete cases.

12/16

桃園國際機場新塔臺園區啟用典禮由交通部部長林佳龍主持，並邀請桃園市市長鄭文燦、桃機公司、航警局、各航空公司、往來合作的中外廠商及媒體朋友共襄盛舉，共同見證這歷史性的一刻。

Inauguration of Taoyuan Airport New Air Traffic Control Tower was hosted by Minister of MOTC, Lin, Chia-lung. Mayor of Taoyuan City Government, Cheng, Wen-tsan, as well as Taiwan Taoyuan International Airport Corporation, Aviation Police Bureau and other partners were invited to witness the historic moment.

12/18

「總臺粉絲見面會-新塔臺園區體驗」在本總臺桃園機場新塔臺園區舉辦，26位參訪者在管制員及氣象員帶領下，參觀新管制作業室、氣象觀測室及360度塔臺模擬機。

Fan meeting was held in Taoyuan Airport New Air Traffic Control Tower, 26 visitors visited the new Air Traffic Control Room, Weather Station and ATC Tower Simulator with 360° view.

12/24

交通部觀光局前副局長陳淑慧講授「操之在己的職涯生活」，共計74人參加。

There were total 74 people participated in the "Take control of your own career life" taught by former Deputy Director-General of Tourism Bureau, MOTC, Chen, Shu-hui.

12/26

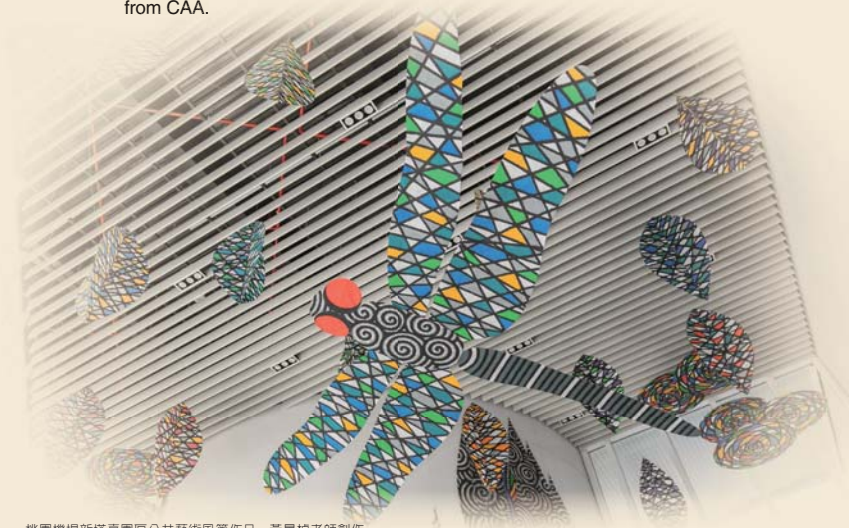
內政部警政署航空警察局長黃祿在黃總臺長麗君陪同下，率隊參訪桃園國際機場新塔臺園區及北部飛航服務園區，瞭解臺北飛航情報區之飛航管制作業外，亦針對園區之保安與保全措施進行細部瞭解給予指導。

Chief of Aviation Police Bureau, NPA, MOI, Huang, Chia-lu accompanied by Director of ANWS, Huang, Li-chun led members to visit Taoyuan Airport New Air Traffic Control Tower and North ATS Park to understand air traffic services operation and Aviation Security operations.

12/30

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.



桃園機場新塔臺園區公共藝術風箏作品-黃景植老師創作

The public art of Taoyuan Airport New Air Traffic Control Tower Park - the kite art designed by Buteo Huang



## 一、助航裝備 Navigation Equipment

名稱 Name	數量 Number	設置地點 Location
歸航臺 (NDB) Non-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) VHF 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 Airport (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), Hengchun, Taitung Zhiben, Ludao, Lanyu
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、臺東豐年、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、跑道中心線燈、滑行道中心線燈、滑行道邊燈、進場燈 (SSALR-10)、跑道頭識別燈 (RTIL-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, Runway centre line lights, Taxiway centre line lights, Taxiway edge lights, Approach lighting systems(SSALR-10), Runway threshold identification lights(RTIL-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、CAT I APCH-27)、著陸區燈 (09)、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、CAT I APCH-27), Runway touchdown zone lights (09), 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 (RTIL-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 (RTIL-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



### 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)	11 座 11 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 7sets	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), Taiwan Taoyuan Int'l 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	11 套 11 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 (2 套)、大屯山 (4 套)、高雄壽山等處 Taiwan Taoyuan Int'l Airport, Kaohsiung Int'l Airport, and Taipei Songshan / Penghu Airport, North ATS Park (2 sets), Mt. Datun (4 sets), 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

備註：底線標示者為新增項目。  
Note：The update status is emphasized with underline.

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 (RTIL-22)、精確進場滑降指示燈 (PAPI)、跑道警戒燈、指示牌、干呎牌 Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (MALSR-04、ALS-22), Runway threshold identification lights (RTIL-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 (RAI-18、ALSF-36)、精確進場滑降指示燈 (PAPI)、跑道警戒燈、指示牌、干呎牌 (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 (RAI-18、ALSF-36), 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、干呎牌 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)、干呎牌 (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 (RTIL)、簡式精確進場滑降指示燈 (APAPI)、干呎牌 Runway edge lights, Runway threshold/end lights, Runway threshold identification lights(RTIL), 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 (RTIL)、簡式精確進場滑降指示燈 (APAPI)、干呎牌 Runway edge lights, Runway threshold/end lights, Runway threshold identification lights (RTIL), 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 (RTIL)、簡式精確進場滑降指示燈 (APAPI)、指示牌、干呎牌 Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Runway threshold identification lights (RTIL), 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 (RTIL)、簡式精確進場滑降指示燈 (APAPI)、指示牌、干呎牌 Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Simple touchdown zone lights, Runway threshold identification lights (RTIL), 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 (RTIL)、精確進場滑降指示燈 (PAPI)、指示牌、干呎牌 Runway threshold/end lights, Taxiway edge lights, Runway threshold identification lights(RTIL), 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：底線標示者為新增項目。  
Note：The update status is emphasized with underline.



## 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 (JMDS) Java-Based Multidimensional Display System (JMDS)	7 套 7 sets	松山、桃園、高雄等航空氣象臺、臺北區域管制中心、臺北、桃園與高雄飛航諮詢臺 Songshan / Taoyuan / Kaohsiung Weather Station, Taipei Area Control Center, Taipei / Taoyuan / Kaohsiung Flight Information Station

備註：底線標示者為新增項目。  
Note : The update status is emphasized with underline.

## 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
飛航管理系統擴充備援 系統 (EBAS) (ATMS-Extended Backup ATC System, EBAS)	2 套 2 sets	北部與南部飛航服務園區 6 個塔臺管制席位：臺北、高雄、松山、豐年、馬公及金門等機場管制臺 North and South ATS Parks Controller Working Position in 6 airport control towers : Taipei, Kaohsiung, Songshan, Fongnian, Magong and Kinmen

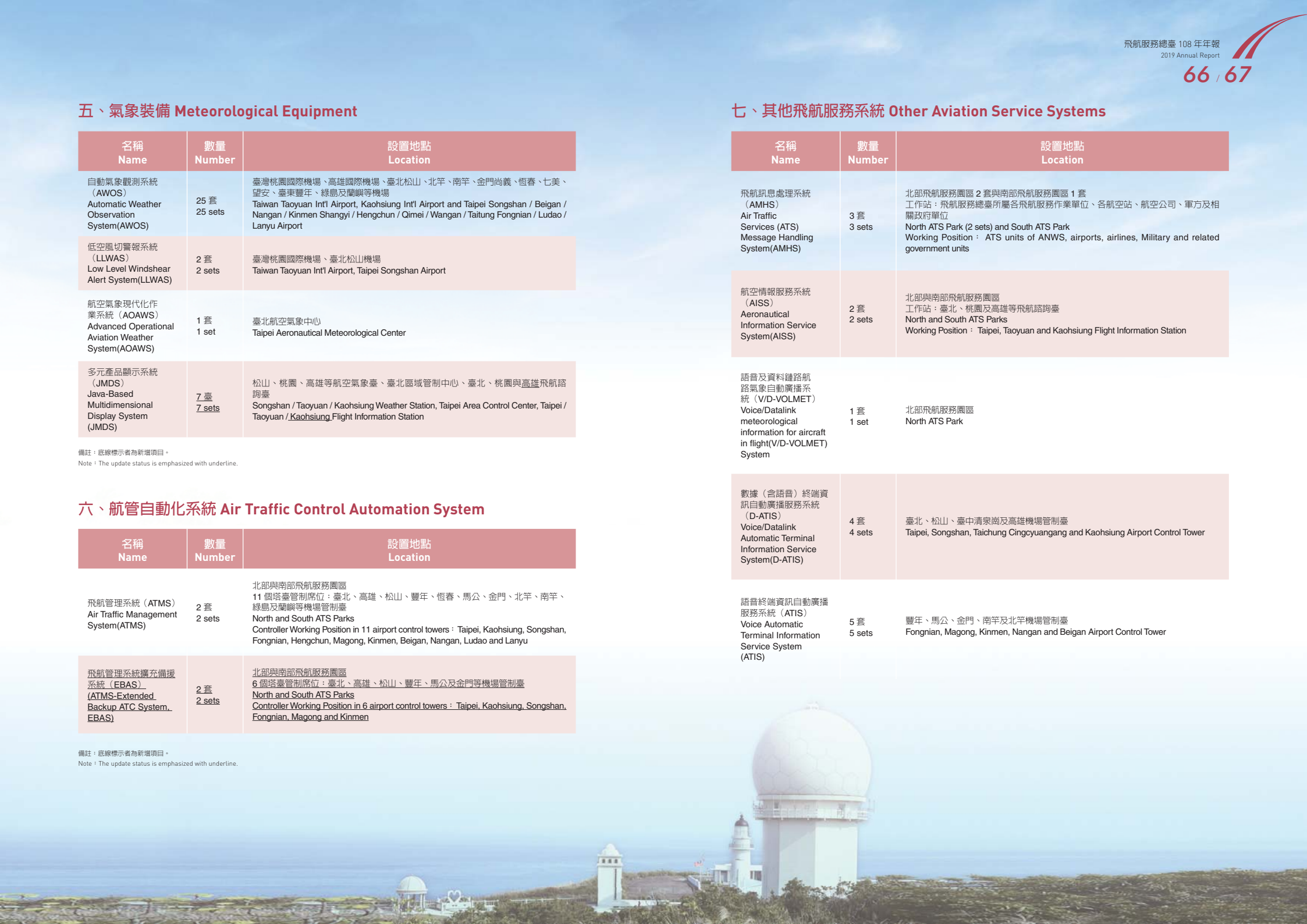
備註：底線標示者為新增項目。  
Note : The update status is emphasized with underline.

## 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 Qingyuan 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)

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 108 年年報

### AIR NAVIGATION AND WEATHER SERVICES 2019 ANNUAL REPORT

出版機關：交通部民用航空局飛航服務總臺

地址：105074 臺北市松山區濱江街 362 號

電話：(02) 8770-2129

編者：交通部民用航空局飛航服務總臺

出版年月：109 年 6 月

創刊年月：99 年 6 月

刊期頻率：年刊

本刊同時登載於飛航服務總臺網站

網址：<https://www.anws.gov.tw>

定價：200 元

Publisher | Air Navigation and Weather Services,

CAA, MOTC

Address | 105074 No. 362, Binjiang St., Songshan Dist., Taipei City

Telephone | +886-2-87702129

Editor | Air Navigation and Weather Services, CAA, MOTC

Time of publication | June 2020

Established in | June 2010

Frequency | Annual

This Report is also available on the ANWS website.

URL | <https://www.anws.gov.tw>

List price | NTD 200

展售門市：

國家書店及網路書店：臺北市松江路 209 號 1 樓

(02) 2518-0207

網址：<https://www.govbooks.com.tw>

五南文化廣場及網路書店：臺中市中國區中山路 6 號

(04) 2226-0330

網址：<https://www.wunanbooks.com.tw>

GPN：2010600405

ISSN：2222-7725

著作財產權人：交通部民用航空局飛航服務總臺

本書保留所有權利，欲利用本書部分或全部內容者，須徵求著作財產權人同意或授權。

Resellers |

Government Publications Bookstore (physical store and online store) : 1F, No.209, Songjiang Rd., Taipei City

Telephone : +886-2-25180207

<https://www.govbooks.com.tw>

Wunan Bookstore (physical store and online store) :

No.6, Zhongshan Rd., Central Dist., Taichung City

Telephone : +886-4-22260330

<https://www.wunanbooks.com.tw>

GPN | 2010600405

ISSN | 2222-7725

Intellectual Property Owner | Air Navigation and Weather Services, CAA, MOTC

All rights reserved. For partial use of this publication, please contact the intellectual property owner for consent or licensing.

設計印製：曉昕創意設計有限公司

電話：(02) 2553-6152

Graphic Design : Wish Creative Design Co., Ltd.

Telephone : +886-2-25536152



交通部民用航空局  
飛航服務總臺  
AIR NAVIGATION AND WEATHER SERVICES, CAA, MOTC

