2020

ANNUAL REPORT 一〇九年 年報

交通部
民用航空局

飛航服務總臺

AIR NAVIGATION AND WEATHER SERVICES, CAA, MOTC

ANWS

2020

ANWS

109年年報 2020 ANNUAL REPORT

飛行，開啓我們對世界前所未有的探險
在起飛與降落之間，以專業與安全鏈結
白晝黑夜不曾停歇

確保飛安、嚴格把關，是總臺責無旁貸的使命
專注凝視、不容失誤，是同仁堅定不移的信念
為往來航機與旅人們
編織一張堅韌、綿密又安全的守護網

Flying unveils a world of adventure we have never
experienced before. ANWS strives to connect
each takeoff and landing with professionalism
and safety throughout night and day.

Ensuring and safeguarding flight safety has always been
ANWS' uncompromising mission, and with the dedication,
devotion and firm beliefs of our staff members;
we will continue to firmly weave a safety net
for all aircraft and passengers.

專業服務
安全守護

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1 迎向新頁
Ushering a New Chapter

總臺長的話 Words from the Director

109 年全球面臨新冠疫情（COVID-19）的嚴峻考驗，旅遊與航空業遭遇重大衝擊，影響貿易經濟甚鉅，這段時間我們兢兢業業配合防疫政策，維持高水準、高品質的飛航安全與服務，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大力協助，讓我們在疫情影響下仍能順利推展飛航事務。109 年總管制架次、過境管制架次、桃園國際機場起降架次及總臺收入雖均較去年減少，但無論航情多寡，我們維持飛航安全及提升服務品質的努力是不減的！持續在接軌國際發展、深耕飛航安全及精進行政管理等方面，厚植服務量能！

在接軌國際民航發展方面，著手研擬下一代航管系統、推動汰新航空氣象現代化作業系統及規劃新一代航空情報服務系統，同時配合國際作業規範變更，推動跑道狀況報告（Runway Condition Report, RCR）相關措施、自行開發國際民航組織氣象資訊交換模式（ICAO Meteorological Information Exchange Model, IWXXM）轉報系統；而在推動區域合作方面，我們與香港國際機場之航班試行小規模計算起飛時間（Calculated Take-Off Time, CTOT）作業，預劃未來流管作業，另與香港飛航情報區縮短 KAPLI 航點交接管間隔，同時透過亞太地區共同虛擬私有網路（Common Regional Virtual Private Network, CRV），完成飛航訊息處理系統（ATS Messages Handling System, AMHS）連線服務，提升航空通信品質。109 年雖因新冠疫情無法出國交流，我們仍積極以網路視訊方式，參與民用飛航服務組織（Civil Air Navigation Services Organisation, CANSO）與非正式東亞飛航管理協調小組（East Asia Air Traffic Management Coordination Group, EATMCG）等國際會議，持續接軌國際掌握民航政策與趨勢。

In 2020, the world faced severe challenges due to the COVID-19 pandemic. With tourism and aviation industries taking the biggest hit, the impact on the economy was significant. During this time, we worked relentlessly to uphold epidemic prevention policies while we continued to maintain the high standards and quality of flight safety and air traffic services. Thanks to the support from the Ministry of Transportation and Communications, Civil Aviation Administration, the military, Taoyuan International Airport Corporation as well as various airports and civil aviation operators; we were able to ensure a continuous development of aviation during such difficult times. While total flight movements, overflight movements, traffic volumes in Taoyuan International Airport, and Air Navigation and Weather Services (hereinafter referred to as ANWS) revenues have all decreased in 2020, our effort to safeguard flight safety and improve service quality remains unabated. Furthermore, we have continued to expand our service capacity in accordance with international developments, elevating our focus in flight safety, and enhancing administrative governance.

Our efforts to align with international civil aviation includes the initial development for the next-generation air traffic management system, the promotion of the Advanced Operational Aviation Weather System Renewal and Update (AOAWS-RU) and the new Aeronautical Information Services System (AISS), as well as implementing the Runway Condition Report (RCR) measures and developing the ICAO Meteorological Information Exchange Model (IWXXM); all of which in accordance with the latest international operational regulations. In terms of regional cooperation, a small-scale pilot program of Calculated Take-off Time (CTOT) with Hong Kong International Airport was implemented to prepare for future flow management operations, while we concised the transfer and assumption of control over KAPLI waypoint with Hong Kong FIR, as well as initiated the ATS Messages Handling System (AMHS) online through the Common Regional Virtual Private Network (CRV) in the Asia-Pacific region to enhance the quality of aviation communication. Although our staff were unable to travel abroad due to pandemic limitations, we still actively participated in online meetings held by the Civil Air Navigation Services Organisation (CANSO) and the informal East Asia Air Traffic Management Coordination Group (EATMCG) to stay abreast of civil aviation policies and trends worldwide.

1 迎向新頁
Ushering a New Chapter

總臺長的話 Words from the Director

安全是總臺不變的使命，我們首次辦理管制員飛行專業知能訓練，拉近管制員與飛行員思維理解，增進管制效率，並充分運用 360 度塔臺模擬機實施航情恢復及低能見度訓練，確保管制技能與掌控航情能力，為未來回復之航情超前部署；配合國防政策，協助軍方國機國造、鳳展及虹翔等重大演訓任務；協助航空公司推動微旅行專案，滿足民眾搭機旅遊之期待；持續推動安全文化、自願報告、辦理公正文化研討，深化同仁安全意識，並完成建置飛航服務安全管理資訊系統，協助危害識別及風險管控；網路資安部分，導入雙因子認證機制、持續強化 24 小時資安監控，並辦理內部稽核與資安演練，提高系統網路防禦能力。

服務則是總臺永續的承諾，我們不斷升級基礎設施，滿足使用者作業需求及精進服務效能，強化航空情報服務網及航空氣象服務網功能，分別新增冰雪公告 (SNOWTAM）申報介面以及太空天氣、熱帶氣旋與火山灰等資訊查詢，提供更精緻的飛航服務；啓用 7 座塔臺數位語音交換系統、馬祖北竿機場 03 跑道 LDA、綠島及恆春 VOR 設備、松山機場跑道中心線燈及綠島機場跑道助航燈光，提高設備妥善率，確保航機操作安全。

而在精進行政管理方面，在全體同仁努力下，我們獲得民航局所屬機關行政績效第 1 名、公文檢核第 1 名及為民服務定期評鑑第 2 名，此外，本人很榮幸獲選為 109 年行政院模範公務人員，這份榮耀是屬於總臺所有同仁，因為同仁們的默默付出，才有如今豐碩的成績，未來我們將無懼挑戰，以用心、貼心、創新精神，開創飛航服務新貌，繼續朝臺北飛航情報區安全、服務、效率的目標邁進！

Safety has always been ANWS' unwavering mission. To this end, we organized the very first flight expertise training for Air Traffic Controllers (ATCs) to increase operational efficiency by bridging the gap between the cockpit and the control room. We have also taken full advantage of our 360-degree tower simulator to assist in familiarization for the eventual growth of controlled movements, as well as deploying recurrent training programs such as low visibility procedures. In addition, we assisted with military exercises and drills to cohere with national defense policies, including projects such as the indigenous advanced jet trainer, the Phoenix Rising and the AT-3. Moreover, we supported airlines and their initiatives to encourage interest for air travel among the general public. We continued to promote safety culture, voluntary reporting, organized the "Just Culture seminar presentation", raised safety awareness of all employees, and completed the Safety Management Information System to assist in hazard identification and risk management. In regards to information security, a two-factor authentication mechanism has been introduced while strengthening 24-hour information security monitoring, as well as conducting internal audits and information security drills to improve the system's network defense capabilities.

Service is ANWS' everlasting commitment and we have continued to upgrade our infrastructure to meet with operational requirements and improve service efficiency. For instance, we enhanced the functions of Aeronautical E-Service (AES) and Aeronautical Meteorological Service Page (AMSP) by adding the SNOWTAM reporting interface as well as the inquiries for space weather, tropical cyclones and volcanic ash for better flight services. In addition, to improve equipment reliability and to ensure operational safety, the Digital Voice Communication Switching System (DVCSS) was launched across 7 air traffic control towers, along with Matsu Beigan Airport's Runway 03 LDA, Ludao and Hengchun's VOR navigation aid, Songshan Airport's runway centre line lighting and Ludao Airport's navigation aid lighting equipment.

In terms of administrative governance, with the hard work of our staff members, ANWS was awarded first place in the CAA Annual Performance Evaluation of Agencies, first place in Evaluation of Document Performance, and second place in Regular Evaluation of Service Performance. In addition, I received the 2020 Civil Service Excellence Award from the Executive Yuan. This honor and achievement belong to all members of ANWS, as their efforts and dedication bore fruits we are all proud of. In the future, we will take on more challenges to create a new outlook for air traffic services with dedication, attentiveness and innovation to provide the Taipei Flight Information Region (hereinafter referred to as Taipei FIR) with safe and efficient services.

黃慶君

Joyce L. C. Huang

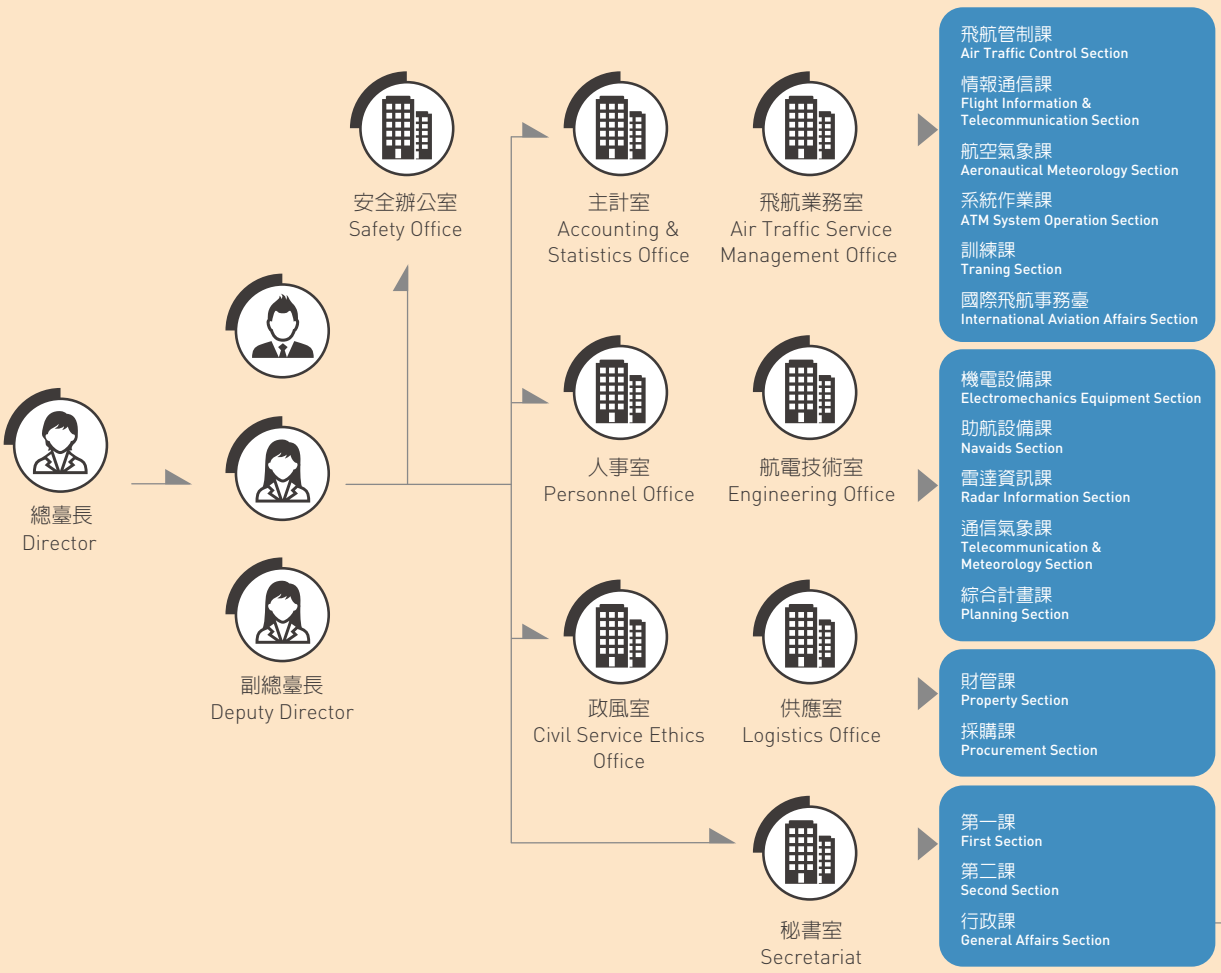
飛航服務總臺　總臺長

Director

Air Navigation and Weather Services

2 迎向曙光
Embracing Dawn

組織架構 Organization

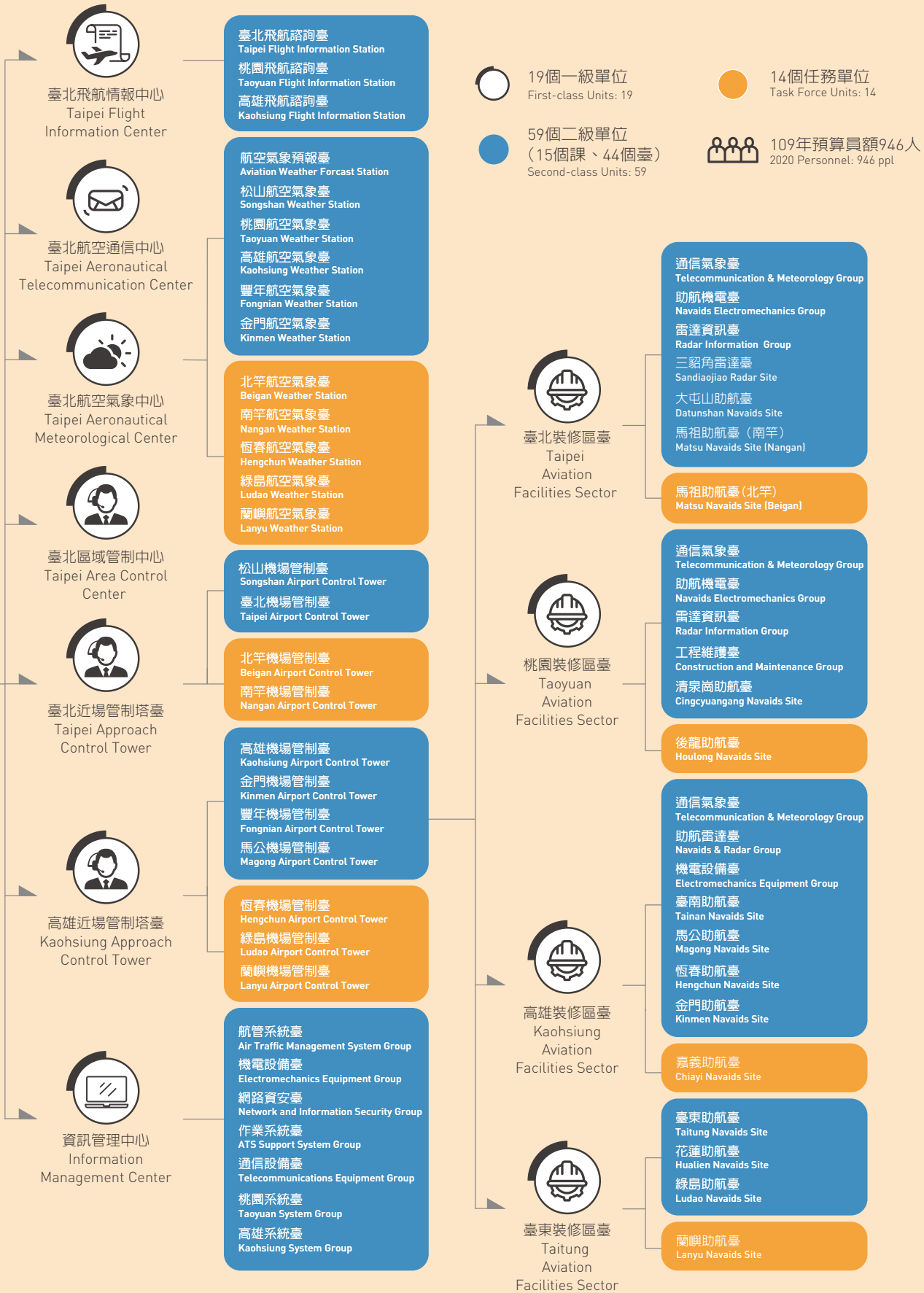


副總臺長 Deputy Director
林嘉明
Lin, Chia-ming

總臺長 Director
黃麗君
Huang, Li-chun

副總臺長 Deputy Director
許智婷
Hsu, Chih-ting

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


19個一級單位
First-class Units: 19
14個任務單位
Task Force Units: 14
59個二級單位
（15個課、44個臺）
Second-class Units: 59
109年預算員額946人
2020 Personnel: 946 ppl
臺北飛航情報中心
Taipei Flight Information Center
臺北飛航諮詢臺
Taipei Flight Information Station
桃園飛航諮詢臺
Taoyuan Flight Information Station
高雄飛航諮詢臺
Kaohsiung Flight Information Station
臺北航空通信中心
Taipei Aeronautical Telecommunication Center
臺北航空氣象中心
Taipei Aeronautical Meteorological Center
航空氣象預報臺
Aviation Weather Forcast Station
松山航空氣象臺
Songshan Weather Station
桃園航空氣象臺
Taoyuan Weather Station
高雄航空氣象臺
Kaohsiung Weather Station
豐年航空氣象臺
Fongnian Weather Station
金門航空氣象臺
Kinmen Weather Station
北竿航空氣象臺
Beigan Weather Station
南竿航空氣象臺
Nangan Weather Station
恆春航空氣象臺
Hengchun Weather Station
綠島航空氣象臺
Ludao Weather Station
蘭嶼航空氣象臺
Lanyu Weather Station
臺北區域管制中心
Taipei Area Control Center
臺北近場管制塔臺
Taipei Approach Control Tower
松山機場管制臺
Songshan Airport Control Tower
臺北機場管制臺
Taipei Airport Control Tower
北竿機場管制臺
Beigan Airport Control Tower
南竿機場管制臺
Nangan Airport Control Tower
高雄近場管制塔臺
Kaohsiung Approach Control Tower
高雄機場管制臺
Kaohsiung Airport Control Tower
金門機場管制臺
Kinmen Airport Control Tower
豐年機場管制臺
Fongnian Airport Control Tower
馬公機場管制臺
Magong Airport Control Tower
恆春機場管制臺
Hengchun Airport Control Tower
綠島機場管制臺
Ludao Airport Control Tower
蘭嶼機場管制臺
Lanyu Airport Control Tower
資訊管理中心
Information Management Center
航管系統臺
Air Traffic Management System Group
機電設備臺
Electromechanics Equipment Group
網路資安臺
Network and Information Security Group
作業系統臺
ATS Support System Group
通信設備臺
Telecommunications Equipment Group
桃園系統臺
Taoyuan System Group
高雄系統臺
Kaohsiung System Group
臺北裝修區臺
Taipei Aviation Facilities Sector
通信氣象臺
Telecommunication & Meteorology Group
助航機電臺
Navaids Electromechanics Group
雷達資訊臺
Radar Information Group
三貂角雷達臺
Sandiaojiao Radar Site
大屯山助航臺
Datunshan Navaids Site
馬祖助航臺（南竿）
Matsu Navaids Site (Nangan)
馬祖助航臺(北竿)
Matsu Navaids Site (Beigan)
桃園裝修區臺
Taoyuan Aviation Facilities Sector
通信氣象臺
Telecommunication & Meteorology Group
助航機電臺
Navaids Electromechanics Group
雷達資訊臺
Radar Information Group
工程維護臺
Construction and Maintenance Group
清泉崗助航臺
Cingcyuangang Navaids Site
後龍助航臺
Houlong Navaids Site
高雄裝修區臺
Kaohsiung Aviation Facilities Sector
通信氣象臺
Telecommunication & Meteorology Group
助航雷達臺
Navaids & Radar Group
機電設備臺
Electromechanics Equipment Group
臺南助航臺
Tainan Navaids Site
馬公助航臺
Magong Navaids Site
恆春助航臺
Hengchun Navaids Site
金門助航臺
Kinmen Navaids Site
嘉義助航臺
Chiayi Navaids Site
臺東裝修區臺
Taitung Aviation Facilities Sector
臺東助航臺
Taitung Navaids Site
花蓮助航臺
Hualien Navaids Site
綠島助航臺
Ludao Navaids Site
蘭嶼助航臺
Lanyu Navaids Site

一、飛航管制

(一) 首次辦理飛航管制員飛行專業知能訓練

為提升飛航管制員飛行專業知能，瞭解航空器性能及操作，培養換位思考能力，以應變異常狀況處理，109 年 11 月 23 日及 12 月 14 日於安捷飛航訓練中心開辦 2 梯次，共 20 人參加，參訓同仁對訓練內容及課程安排滿意度達 95% 以上。

(二) 配合國際民航組織 (International Civil Aviation Organization, ICAO) 推行跑道狀況報告 (RCR) 案

為因應 ICAO 將自 110 年 11 月 4 日開始實施 RCR，已辦理飛航管理程序修編、改變管理評估及年度複訓，並完成臺北、松山、豐年、南竿、北竿、高雄、馬公、金門及清泉崗等 9 座塔臺 ATIS 字典語音庫上版作業，建立縮語資料庫，協助管制員熟悉作業程序並減輕工作負荷。

受訓學員合影留念
Photo of the trainees

1. Air Traffic Control

I. The first ATC flight expertise training

In order to improve ATCs' understanding concerning pilot operations and to gain a deeper insight of aircraft performance, two batches of flight training for ATCs were conducted at APEX Flight Academy from November 23rd to December 14th, 2020. The 20 ATCs who participated in the program showed an overall satisfaction of 95% with the training and course arrangement.

ATIS 字典語音庫上版情形
The upload of ATIS dictionary voice database

II. Implementation of Runway Condition Report (RCR) in line with International Civil Aviation Organization (ICAO)

In response to ICAO's schedule of implementing RCR starting November 4th, 2021, ANWS completed the revision of Air Traffic Management Procedures, Change Management Assessments and held annual recurrent trainings. The ATIS dictionary voice database was uploaded across 9 towers including Taipei, Songshan, Fongnian, Nangan, Beigan, Kaohsiung, Magong, Kinmen and Cingcyuangang with an abbreviation database. This aims to help the controllers familiarize themselves with the operating procedures and reduce their workload.

學員與教官實機飛行前合影
Photo of the trainee and instructor before flying

(三) 配合防疫政策執行微旅行專案

因應 COVID-19 疫情，協助航空公司推動微旅行專案，配合本國籍航空公司飛航臺北飛航情報區（下稱本區）內及過境福岡、馬尼拉、仁川、香港飛航情報區等航班，提供航管服務、確保飛航訊息順利傳遞至鄰近飛航情報區，以滿足民眾搭機旅遊之期待，共計執行 24 次微旅行專案計畫。

(四) 本區與香港試行計算起飛時間 (CTOT) 作業

自 109 年 6 月 8-12 日本區與香港協調於每日中午 12 時至 18 時，就桃園國際機場起飛至香港國際機場之航班試行小規模之 CTOT 作業，降低航班在到達目的地機場過程中可能遭受到的空中延誤，增進飛航安全並提升飛航效能。

III. Flights to Nowhere and Epidemic Prevention Measures

In response to the COVID-19 pandemic, ANWS assisted airlines with their initiatives to promote air travel through operating Flights to Nowhere. Domestic airlines were able to navigate through the Taipei FIR as well as neighboring FIRs including Fukuoka, Manila, Incheon and Hong Kong while receiving various air traffic services including air traffic control and flight information delivery to neighboring FIRs. A total of 24 flights to nowhere were operated to meet the public demands for air travel.

IV. Calculated Take-off Time (CTOT) Trial between Taipei FIR and Hong Kong

From 12am to 6pm between June 8th and 12th, 2020, Taipei FIR coordinated with Hong Kong on a small-scale CTOT trial for flights between Taoyuan International Airport and Hong Kong International Airport. This reduces potential delays before a flight arrives at the destination airport and further secures flight safety as it improves operational efficiency.

CTOT 作業平臺
CTOT operations

（五）本區與香港飛航情報區縮短 KAPLI 航點交接管間隔

自 109 年 3 月 26 日本區與香港飛航情報區縮短 KAPLI 航點交接管間隔，兩架同速航機由雷達 30 浬隔離縮減為 20 浬；自本區至香港後機快於前機者，由非雷達隔離改為 40 浬，增進雙方航路流量，提升飛航服務品質及飛航安全。

V. Reducing the separation minima for traffic handoff over KAPLI waypoint with Hong Kong FIR

Starting March 26th, 2020, Taipei FIR has reduced the minimum separation requirement for handing off traffic jurisdiction over KAPLI waypoint with Hong Kong FIR. Aircraft operating at the same speed can now be separated by only 20 NM while crossing KAPLI under a radar environment. On the other hand, if the following aircraft is faster than the preceding one, the minimum separation distance has been changed from previous non-radar manual handoffs to 40 NM under radar. This reduction largely increases the flow between the two regions and improves the quality of air traffic services and flight safety.

(六)辦理飛航管制班務督導、協調員及實務訓練教官督查作業

航管督查業務自 104 年起分年實施塔臺管制員、雷達管制員、班務督導及協調員專案督查，109 年賡續辦理第 2 次班務督導及協調員督查作業，並將實務訓練（On-the-Job Training, OJT）教官納入督查對象，確保航管同仁工作維持良好水準，自 109 年 5 月至 10 月執行，共執行 27 梯次、69 人次。

(七)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。109 年共計提供 185 次緊急應變處置（含乘客身體不適、鳥擊、航機機械故障等異常狀況）。

VI. ATC competency assessment for supervisors, coordinators and On-the-job training instructors

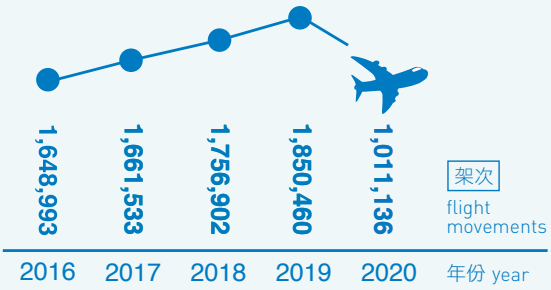
The Air Traffic Competency Assessment for ATCs was launched in 2015, through which all ATCs; including tower controllers, radar controllers, coordinators and shift supervisors; were evaluated on an annual basis. In 2020, the second assessment cycle was completed for shift supervisors and coordinators, while On-the-Job Training instructors (OJTIs) were added to the assessment to ensure performance standard. From May to October 2020, 27 batches of assessments were conducted for 69 active ATCs.

VII. Emergency response and medical assistance

In addition to providing Air Traffic Control services, all ATC units are prepared to respond to abnormalities or emergencies throughout different stages of flight operations. A total of 185 emergency situations were addressed and handled in 2020, including bird strike incidents during takeoff and landing, mechanical failures and patient onboard medical situations.

服務統計 Service statistics

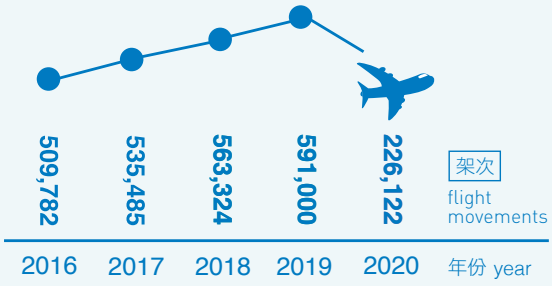
總管制架次
Total Flight Movements



109 年總管制架次為 1,011,136 架次，較 108 年減少約 45.36 %

Total number of controlled flight movements in 2020 was 1,011,136, a 45.36% decrease compared with 2019.

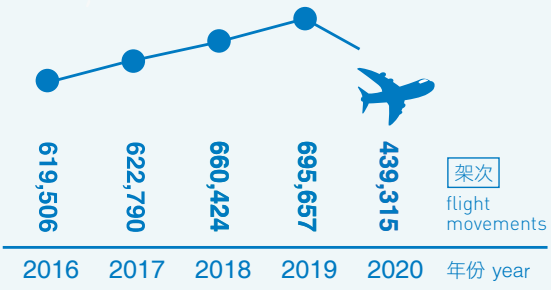
航路管制架次
Area Control Flight Movements



109 年航路管制架次為 226,122 架次，較 108 年減少約 61.74 %

The number of en-route flight movements in 2020 was 226,122, a 61.74% decrease compared with 2019.

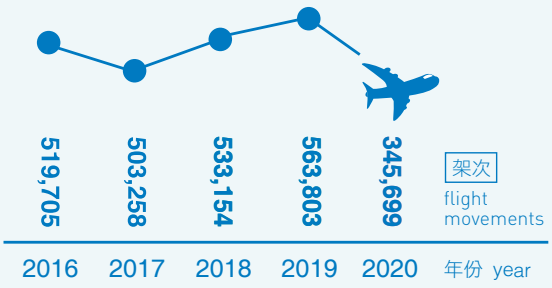
近場管制架次
Approach Control Flight Movements



109 年近場管制架次為 439,315 架次，較 108 年減少約 36.85 %

The number of approach control flight movements in 2020 was 439,315, a 36.85% decrease compared with 2019.

機場管制架次
Aerodrome Control Flight Movements



109 年機場管制架次為 345,699 架次，較 108 年減少約 38.68 %

The number of aerodrome control flight movements in 2020 was 345,699, a 38.68% decrease compared with 2019.

二、飛航情報

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

109 年 8 月 25 日新增國際民航組織（ICAO）新格式冰雪公告（SNOWTAM）申報介面及航行警示圖新增「篩選檢視無人機飛航公告（UAS ONLY）」功能，滿足使用者作業需求，提供精緻化之飛航情報服務。

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

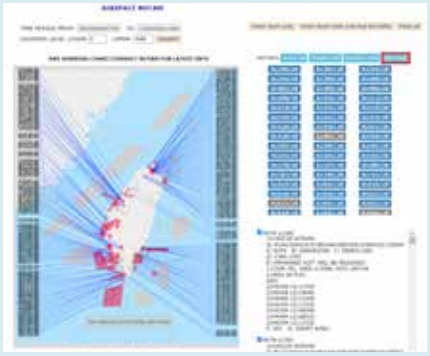
109 年 2 月成立工作小組，賡續召開 4 次工作會議，研讀最新航空情報規範、國際民航組織「從航空情報服務進階至航空情報管理」之建議做法，持續蒐集國際航空情報管理現貨廠商產品架構及異地備援機制，以利提報新一代航空情報服務系統建置計畫及後續需求規格撰寫。

新一代航空情報服務系統工作小組會議
AISS working group meeting

2. Flight Information

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

On August 25th, 2020, the enhanced function of ICAO SNOWTAM's new format proposal, and the Airspace NOTAM view of "UAS NOTAM Only" was introduced online. Such new functions can better accommodate more diverse operational needs.



航行警示圖 UAS ONLY 功能
The UAS NOTAM Only function

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

In February 2020, an Aeronautical Information Services System working group was set up to study the latest ICAO related aeronautical information documents, and to collect relevant data on international aeronautical information management manufacturers' product structure and remote backup mechanism. These efforts were aimed to facilitate the submission of a new-generation of aeronautical information service system construction plan and subsequent requirement specifications. A total of 4 studying group meetings were held.

（三）實施飛航公告安全事件通報機制

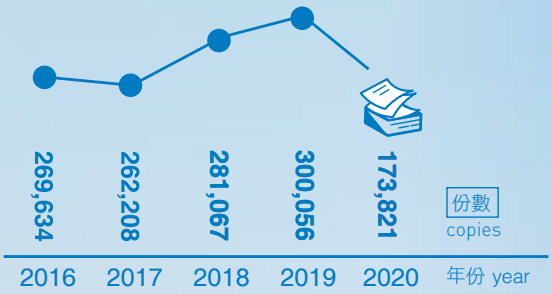
- 當國際發布飛航公告、飛航指南修正、飛航指南補充通知書資料且涉及空域、航行警示、軍事演習、飛彈射擊等影響飛航安全時，均主動轉知航空公司注意，確保飛航安全。109 年總計通報 4,370 次。
- 另為協助航空公司即時掌握有關 COVID-19 疫情之飛航限制、人員入境限制及防疫措施等國際飛航公告資訊，109 年發布 COVID-19 相關通報計 9,400 次。

III. NOTAMs and Aviation Safety Information Distribution Mechanism

- Proactively informing airlines on publications or amendments of NOTAMs, AIPs, AIP supplements, and various aeronautical information regarding airspace and navigation warnings, missile warnings and other military activities that may affect flight safety. A total of 4,370 such notices were sent out in 2020.
- In addition, to assist airlines in staying updated with aeronautical information related to the COVID-19 pandemic, a total of 9,400 notices including flight restrictions, personnel entry restrictions and pandemic prevention measures were sent out in 2020.

服務統計 Service Statistics

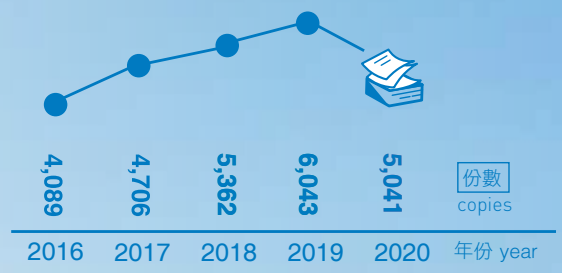
處理飛航計畫
Filed Flight Plans



109 年處理飛航計畫 173,821 份，較 108 年減少約 42.07%

The number of flight plans processed in 2020 was 173,821, a 42.07% decrease compared with 2019.

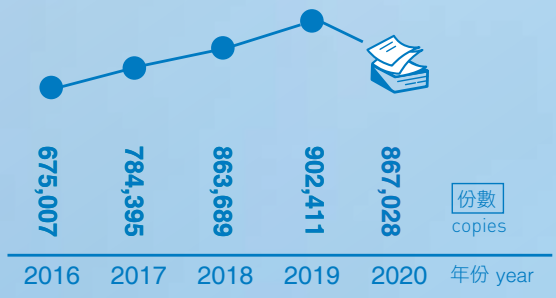
發布本區飛航公告
Notice to Airmen



109 年發布本區飛航公告 5,041 份，較 108 年減少約 16.58 %

The number of NOTAMs issued by Taipei FIR in 2020 was 5,041, a 16.58% decrease compared with 2019.

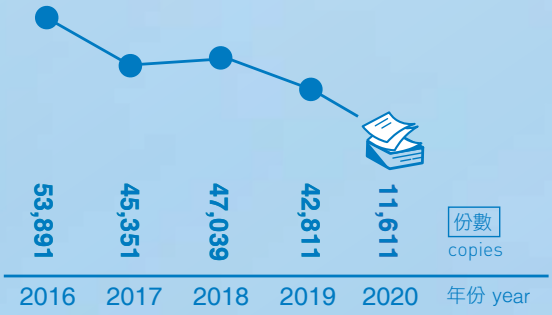
處理他區飛航公告
NOTAMs from Other Countries



109 年處理他區飛航公告 867,028 份，較 108 年減少約 3.92%

The number of NOTAMs from other regions processed in 2020 was 867,028, a 3.92% decrease compared with 2019.

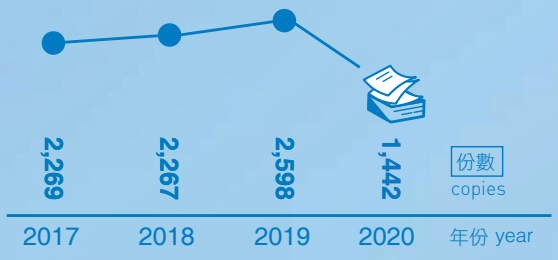
提供飛航文件
Flight Documents



109 年提供飛航文件 11,611 份，較 108 年減少約 72.88 %

The number of flight documents provided in 2020 was 11,611, a 72.88% decrease compared with 2019.

標示機場場面飛航公告
Aerodrome NOTAM Display



109 年標示機場場面飛航公告 1,442 份，較 108 年減少約 44.50 %

In total 1,442 NOTAMs were marked on aerodrome charts in 2020, a 44.50% decrease compared with 2019.

三、航空通信

(一)透過亞太地區共同虛擬私有網路(CRV)與鄰區香港完成 AMHS 連線

本區與香港飛航情報區於 109 年 6 月 3 日透過 CRV 網路完成飛航訊息處理系統（AMHS）連線服務，提升航空通信的服務品質。

(二)辦理「飛航訊息處理系統(AMHS)」南北異地備援演練

109 年 8 月 12 日進行 AMHS 南北異地備援演練，驗證南部飛航服務園區亞太地區共同虛擬私有網路（CRV）路由及 AMHS 系統轉報功能及各類型用戶收發報功能正常。

3. Aeronautical Telecommunication

I. Completing the AMHS connection with Hong Kong via CRV

In order to improve the service quality of aeronautical communications, Taipei FIR completed the AMHS connection with Hong Kong FIR via CRV on June 3rd, 2020.

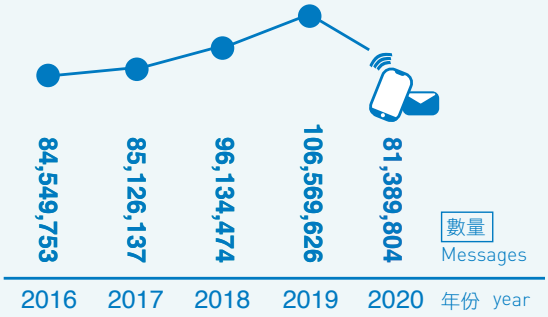
II. Carrying out the AMHS North-South Remote Backup Drill

The AMHS north-south remote backup drill was conducted on August 12th, 2020 to validate both the CRV and AMHS functions in the South Air Traffic Services (ATS) Park.

航空通信席
Aeronautical telecommunication operation

服務統計 Service statistics

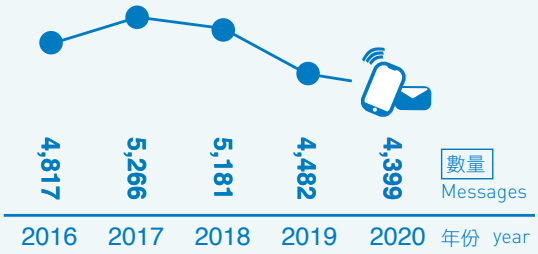
航空固定通信報量
Aeronautical Fixed Telecommunication Service messages



109 年航空固定通信報量為 81,389,804 份，較 108 年減少約 23.63 %

The total amount of aeronautical fixed telecommunication service messages handling in 2020 was 81,389,804, a 23.63% decrease compared with 2019.

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



109 年航空行動通信報量為 4,399 份，較 108 年減少約 1.85 %

The total amount of aeronautical mobile telecommunication service messages handling in 2020 was 4,399, a 1.85% decrease compared with 2019.

四、航空氣象

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

109 年 8 月 3 日航空氣象服務網提供太空天氣、熱帶氣旋及火山灰等資訊查詢服務，滿足使用者作業需求，提升航空氣象服務品質。

(二)推動國際民航組織氣象資訊交換模式(IWXXM)報文國際交換

配合國際民航組織之規劃進程，自 109 年 11 月 5 日起將本區松山、桃園、高雄、豐年、清泉崗及臺南等機場之例行及特別天氣報告（METAR/SPECI）與機場預報（TAF），以及本區顯著危害天氣（SIGMET）等傳統文數字電碼，轉換成氣象資訊交換格式（IWXXM），傳送至香港區域航用氣象電報交換系統（ROBEX）進行國際交換，提升飛航作業效率。

4. Aeronautical Meteorology

I. Enhance the functionality of the Aeronautical Meteorological Service Page (AMSP)

On August 3rd, 2020, the AMSP started providing information inquiry services for space weather, tropical cyclones and volcanic ash to meet the operational needs of users and improve the quality of aeronautical meteorological services.

II. Facilitate the international exchange of IWXXM messages

From November 5th, 2020, in accordance with the planning of ICAO, ANWS converted the METAR/SPECI and TAF of Songshan, Taoyuan, Kaohsiung, Fengnian, Cingcyuangang and Tainan Airports, as well as the traditional digital codes such as SIGMET in Taipei FIR into the IWXXM format. The reports are then sent to the Hong Kong FIR's ROBEX for international exchange, improving the efficiency of aeronautical operations.

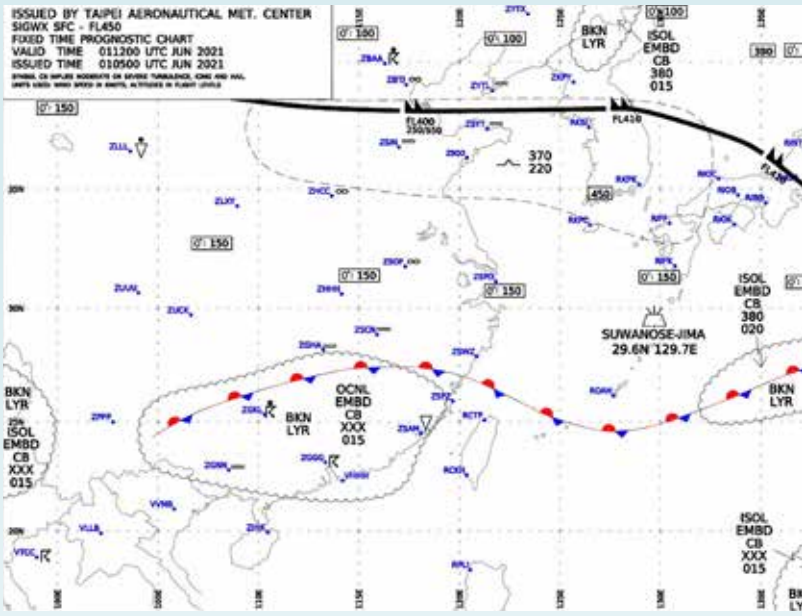
氣象預報討論情形
Discussion of the weather forecast

(三) 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，規劃辦理 110 年至 113 年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。

(四) 提供航空氣象簡訊服務

為利航機適航及連假疏運作業即時決策參考，提供民航局、機場等相關單位各民航（含軍民合用）機場不適航天氣、連續假期及疏運計畫機場天氣預報、機場颱風警報單發布及顯著天氣簡訊通報等 6 種航空氣象通報簡訊，109 年發布簡訊次數計 1,622 次。



顯著天氣圖
Significant weather chart

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

To improve flight safety and service quality, and to achieve the organizational goals of becoming the leading air traffic service provider in the Asia-Pacific region, ANWS proceeded with the AOAWS-RU 2021-2024 to stay in line with international standards and enhance the aviation weather service quality of Taipei FIR.

IV. Providing aeronautical meteorology message services

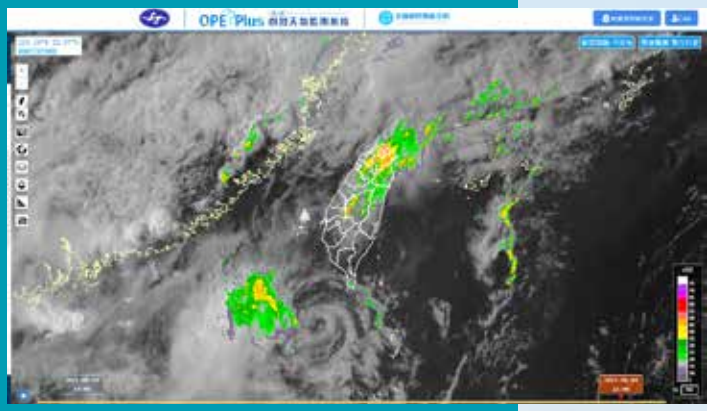
Aeronautical meteorology messages in 6 categories （including unairworthy weather, weather forecast for consecutive holidays, typhoon warnings and significant weather message delivery) are provided to the CAA, airports and other civil aviation organizations. This helps them accurately predict airworthy conditions and air traffic management for immediate decision-making. A total of 1,622 messages were provided in 2020.

（五）提供航空氣象資料服務

提供各單位相關民航機場航空氣象電話諮詢服務計 3,629 次；提供政府機關及接受民間機構申辦機場氣象資料計 167 次，做為學術研究、航空公司貨損調查、機場氣象特性瞭解、飛安事件調查、儀航程序規劃及場站施工參考之用。

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

109 年 10 月 7 日完成新一代劇烈天氣監測系統（QPE Plus）民航局客製化網頁初版建置。



QPE Plus 網頁顯示
QPE Plus webpage display

（七）編製航空氣候年報

109 年 3 月 1 日完成 108 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。

V. Providing aeronautical meteorology data services

3,629 telephone inquiries related to aeronautical meteorology at civil aviation airports were handled, along with 167 airport meteorology data requests from both public offices and civil organizations. These services were used for a variety of purposes, including academic research, air cargo damage investigations, airport weather analysis, flight safety investigations, instrument flight rules (IFR) procedure design, and airport construction, etc.

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

On October 7th, 2020, CAA's customized webpage for the new generation of QPEplus completed its first version.

VII. Publication of 2019 Aerodrome Climatological Annual Summaries

On March 1st, 2020, the 2019 Aerodrome Climatological Annual Summaries were completed and published on the ANWS's official website (http://www.anws.gov.tw/Business Dissemination/Publication) with statistical weather information for civil airports available for download.

五、航空電子

(一) 啓用 7 座塔臺數位語音交換系統

109 年 2 月 10 日及 17 日分別啓用松山、南竿、北竿、金門、澎湖、恆春及臺東機場等 7 座塔臺數位語音交換系統，由一般實體專線改為 IP 網路化，簡化統一維護保養程序，提升通話品質與系統裝備妥善率。

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

- 109 年 3 月 26 日啓用馬祖北竿機場 03 跑道 LDA/DME，提升馬祖北竿機場整體飛航安全與飛航服務品質。
- 109 年 6 月 23 日、8 月 25 日及 11 月 28 日分別完成金門 24 跑道 LDA/DME 提升為 ILS/DME、北竿 21 跑道 LDA/DME、松山 28 跑道 LDA/DME 等 3 套設備架設及陣地測試。

5. Aeronautical Electronics

I. Launch of the Digital Voice Communication Switching System (DVCSS) for 7 air traffic control towers

The new DVCSS system was launched across 7 Air Traffic Control Towers at Songshan, Nangan, Beigan, Kinmen, Penghu, Hengchun and Taitung Airports on February 10th and 17th, 2020. The dedicated physical line was transformed into an IP network, relieving strains for maintenance efforts and improved the quality of communication as well as equipment reliability.

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

- The LDA/DME of Runway 03 at Beigan Airport was deployed on March 26th, 2020, to improve the overall flight safety and air traffic service quality of the airport.
- The LDA/DME upgrade to ILS/DME for Runway 24 at Kinmen, the LDA/DME for Runway 21 at Beigan, and LDA/DME for Runway 28 in Songshan were constructed and on-site tests conducted on June 23rd, August 25th and November 28th, 2020 respectively.

花蓮雷達
Hualien Radar Station

(三)汰換後龍、綠島、恆春及西港 VOR/DME 設備

後龍 VOR 設備已於 108 年 12 月 10 日啓用，並於 109 年 6 月 17 日、12 月 3 日及 110 年 2 月 25 日分別啓用綠島、恆春及西港 VOR 設備，提升航路導航設備穩定及妥善率。

(四)汰換臺北飛航情報區 DME 設備

109年8月28日、9月17日、9月23日分別完成南竿、恆春及知本DME設備架設，提升設備之可靠度與穩定性，建構完善的助航環境。

(五)汰換臺北飛航情報區 NDB/LOCATOR 設備

109 年 10 月 13 日、11 月 13 日、11 月 25 日、12 月 14 日分別完成基隆、花蓮、金門、臺東及高雄 NDB 設備之汰換及陣地測試，確保航機操作安全性，提高設備妥善率與可靠度。

III. Replacement of VOR/DME facilities in Houlong, Ludao, Hengchun and Xigang

VOR/DME facilities were replaced across Taipei FIR region to enhance the stability and dependability: Houlong on December 10th, 2019, Ludao on June 17th, Hengchun on December 3rd, 2020, and Xigang on February 25th, 2021.

IV. Continued replacement of DME equipment in Taipei FIR

On August 28th, September 17th and September 23rd, 2020, DME equipment was installed at Nangan, Hengchun and Zhiben, respectively, to improve the reliability and stability of the equipment, in order to complete the navigational environment.

V. Continued replacement of the NDB/LOCATOR equipment in Taipei FIR

On October 13th, November 13th, November 25th, and December 14th, 2020, the replacement and on-site tests of NDB equipment in Keelung, Hualien, Kinmen, Taitung and Kaohsiung were completed respectively to ensure the safety of aircraft operations and the integrity of the equipment.

恆春 VOR 設備
Hengchun VOR facilities

鵝鑾鼻長程雷達
Eluanbi long-range radar

(六) 增設及汰換各機場助航燈光設備

- 109 年 3 月 12 日啓用松山機場跑道中心線燈，強化航機起降識別，確保航機操作安全。
- 109 年 7 月 18 日完成架設金門機場 24 跑道精確進場滑降指示燈（PAPI），提升航機落地操作安全性。
- 109 年 12 月 8 日新增綠島機場跑道助航燈光暨汰換直昇機坪邊燈，強化機場跑道識別度，提升航機操作安全。

綠島機場跑道燈光
Ludao Airport's navigation aid lightings

(七) 汰換各機場助航機電設備

- 109 年 9 月 17 日汰換馬祖南竿、北竿機場助航燈光電力纜線及隔離變壓器，以維兩機場助航燈光穩定運作。
- 109 年 10 月 20 日完成汰換臺東豐年機場助航燈光監控系統及恆流變壓器設備。

VI. Increasing and replacing airport navigational lightings

- On March 12th, 2020, the Runway centre line lights of Taipei Songshan Airport were deployed to benefit the identification for aircraft taking-off and landing, ensuring aircraft operational safety.
- On July 18th, 2020, the installation of PAPI was completed for Runway 24 at Kinmen Airport to improve the safety of aircraft landing operations.
- On December 8th, 2020, Ludao Airport's navigation aid lightings were added and helipad edge lights were replaced to enhance the airport runway identification and improve the safety of aircraft operations.

VII. Replacing power supply equipment for air navigational facilities

- On September 17th, 2020, the power cables and isolation transformers for the navigation aid lighting equipment were replaced at Nangan and Beigan airports in Matsu to ensure the stable operation of the navigation aid lighting equipment.
- On October 20th, 2020, the replacement of the monitoring system for the navigation aid lighting equipment and constant current transformer equipment were completed at Taitung Airport.

（八）強化資通安全業務及防護作為

- 109 年 5 月 28-29 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。
- 完成濱江地區行政網路內部防火牆架設、啓動趨勢公司 APT PS 服務監控異常連線、SSL VPN 設備導入雙因子認證機制、建置 Jump Server 區供系統管理人員連線管理系統主機，並辦理內部稽核與資安演練，提高系統主機的網路防禦能力。

（九）精進飛航服務系統

- 數位語音交換系統（DVCSS）期中升級，已完成設備架設、系統整合測試、遠端視訊工廠訓練、南北管陣地維護訓練及陣地驗收測試。
- 飛航管理系統（ATMS）期中升級，已完成工廠驗收測試及進行硬體設備安裝架設。

資通安全教育訓練
Information security training


ATMS 升級更換管制螢幕
The new screens on control working positions

VIII. Reinforcing information security and protection

- Our Information Security Management System (ISMS) was audited by external auditors on May 28th to 29th, 2020 and we successfully achieved ISO 27001: 2013 certification. ANWS completed a scan of penetration testing, as well as system vulnerablilties and IT security diagnostic assessment. This ensures the cyber security of air traffic service IT systems.
- The installation of the internal firewall of the administrative network, activation of the Trend Micro's APT PS service to monitor abnormal connections, introduction of a two-factor authentication mechanism for the SSL VPN equipment, and the construction of Jump Server area for system administrators to connect and manager servers in the Binjiang area were completed. At the same time, internal audits and information security drills were organized to improve the network defense capabilities of the system host.

IX. Improvement of Air Traffic Service Systems

- The DVCSS had a mid-term upgrade with completed equipment installations, system integration tests, remote factory training via video, north-south park management training and on-site acceptance tests.
- Air Traffic Management System (ATMS) had a mid-term upgrade with the factory acceptance test and the hardware equipment installation completed.

ATM/AISS 系統機房
ATM/AISS equipment room

設備及系統妥善率
Availability of equipment and system

名稱 Name / 年度 Year	105 年 2016	106 年 2017	107 年 2018	108 年 2019	109 年 2020
雷達設備 Radar Equipment	99.9879%	99.9915%	99.9935%	99.9960%	99.9958%
助航設備 Navigation Aid Equipment	99.9395%	99.9989%	99.9892%	99.9956%	99.9928%
飛航管理系統 ATMS Air Traffic Management System(ATMS)	99.9963%	100%	99.9967%	100%	100%
航空情報服務系統 AISS Aeronautical Information Service System(AISS)	99.8951%	99.9840%	99.9928%	99.9939%	99.9934%
飛航訊息處理系統 AMHS Air Traffic Services Messages Handing System(AMHS)	99.9583%	99.9949%	99.9911%	99.9943%	99.9991%
航空氣象服務網 AMSP Aeronautical Meteorological Services Page(AMSP)	99.9333%	100%	100%	99.99%	99.98%
數位語音交換系統 DVCSS Digital Voice Communication Switching System(DVCSS)	100%	100%	100%	100%	100%
飛航服務業務網路 ASN ATS Service Network(ASN)	99.999%	99.98%	100%	100%	100%
行政網路 OAN Office Administration Network(OAN)	99.979%	100%	100%	100%	100%

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，推動安全管理四大面向相關工作、監控總臺安全管理系統、識別潛在風險事件、追蹤安全相關議題及安全績效達成情形。

（二）修正安全管理指導文件

修訂「飛航服務安全管理實施計畫（SMIP）AF版」、「飛航服務安全管理系統手冊AJ版」及「飛航服務安全查核手冊 AI 版」等安全管理相關文件。

（三）建置飛航服務安全管理資訊系統

109 年 12 月完成建置飛航服務安全管理資訊系統，將安全管理四大面向作業納入系統中，協助危害識別及風險管控作業，俾利未來統計及分析。

飛航服務安全管理資訊系統
Safety Management Information System

6. Safety Management System (SMS)

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

Safety meetings, including the quarterly Safety Review Committee led by our Director, monthly Safety Work Group Meeting and operational units' weekly Safety Action Groups Meeting (SAG), are held regularly to enhance SMS, tracking safety issues, and monitoring ANWS's safety performance.

II. Revision of SMS documents

Revised safety management documents including ANWS Safety Management Implementation Plan (SMIP), ATS SMS Manual, and Safety Audit Manual.

III. Establishing the Safety Management Information System

In December 2020, the Safety Management Information System was completed. The system incorporates the four major aspects of safety management to assist our staff in hazard identification and risk management, and control operations to facilitate future statistics analysis.

專業知識分享會
The professional knowledge-sharing workshop

（四）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。

（五）執行安全績效控管與查核

- 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 13 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值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。

（六）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 7 梯次專業知識分享會及 1 次公正文化研討成果發表等安全文化推廣活動。

臺北區域管制中心每日簡報
Daily briefing by Taipei Area Control Center

IV. Enhancing safety risk management

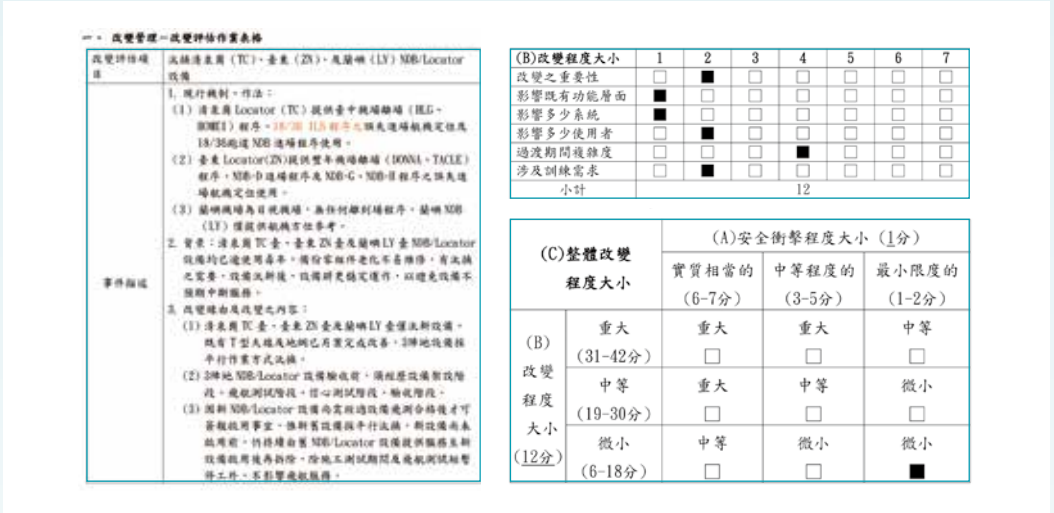
- Hazards in the organization, system and daily operations are identified through daily briefings, safety action group meetings, operations review meetings and ANWS managerial meetings. Progress in safety issues is controlled and monitored as part of the safety risk management.
- Safety Office has continued to participate in risk assessments evaluations and Change Management evaluation meetings, and provide relevant recommendations to identify ANWS's organizational hazards and risk mitigation strategies.
- Both internal and external voluntary reports are received, processed, and tracked with proactive risk management measures.

V. Safety performance monitoring and safety audits

- CAA supervised and conducted a systematic audit and 10 external compliance audits to ANWS. ANWS also conducted 13 internal audits based on the principle of autonomous safety management. All defects found during the inspections and improvement suggestions were listed and tracked, while monthly and quarterly follow-ups were further conducted to improve services and ensure flight safety.
- Five areas of ATS key performance indicators (KPIs) are continuously monitored and measured by ANWS, and the attainments of KPIs are reported to CAA before the 15th of each month. Improvement measures are proposed when the safety performance indicators (SPI) or operational efficiency indicators do not meet the expected safety targets.

VI. Safety Promotion and Training

- ANWS compiled and published 4 issues of a safety management information newsletters, and organized safety culture promotion activities, including 7 professional knowledge-sharing workshops and 1 Just Culture seminar presentation.



(B)改變程度大小	1	2	3	4	5	6	7
改變之重要性	□	■	□	□	□	□	□
影響既有功能層面	■	□	□	□	□	□	□
影響多少系統	■	□	□	□	□	□	□
影響多少使用者	□	■	□	□	□	□	□
過渡期間複雜度	□	□	□	■	□	□	□
涉及訓練需求	□	■	□	□	□	□	□
小計	12						

(C)整體改變程度大小		(A)安全衝擊程度大小（1分）		
		實質相當的（6-7分）	中等程度的（3-5分）	最小限度的（1-2分）
(B)改變程度大小（12分）	重大（31-42分）	重大 □	重大 □	中等 □
	中等（19-30分）	重大 □	中等 □	微小 □
	微小（6-18分）	中等 □	微小 □	微小 ■

改變管理評估作業
Change management evaluation

安全資訊彙編
Safety management newsletters

- 舉辦「飛航服務安全管理訓練」2 梯次，33 人次；「飛航服務安全符合性查核複訓」2 梯次，39 人次；於飛航管制人員年度複訓講授「109 年飛航服務安全管理作業宣導」課程 4 梯次；並將相關課程製作成影音檔，提供複訓使用或同仁自我學習。
- 109 年 6 月 17 日參加臺北國際航空站舉行之「109 年度安全管理系統暨空側作業安全教育訓練」，分享本總臺安全管理系統績效及成熟度提升經驗。
- 109 年 9 月 3 日舉辦「公正文化研討成果發表會」，各單位將研討成果製成海報並以分組闡述及問答的方式進行交流，共計 45 人參加，將公正文化及報告文化落實於同仁飛航服務日常作業。
- 109 年 11 月 13 日參加「109 年度航空站安全管理系統訓練暨座談會」，分享相關實務作業及公正文化研討之成果，並進行安全管理經驗交流。

至臺北國際航空站分享 SMS 成果
Sharing SMS experience at Taipei International Airport

- ANWS conducted 2 sessions of "ATS Safety Management Training" with 33 participants, 2 sessions of "ATS SMS Auditor Recurrent Training" with 39 participants, while 4 sessions of "ATS SMS Measures in 2020" were incorporated into ATC annual recurrent training. Educational videos were provided for future internal trainings or autonomous learning purposes.
- ANWS participated in the "2020 Annual Safety Management System and Airside Operation Safety Training" held at Taipei Songshan International Airport on June 17th, 2020, to share our experience enhancing the SMS performance and availability.
- The "Just Culture Seminar Presentation" was held on September 3rd, 2020. Each unit designed a poster to share the results and exchanged through group discussions and Q&A sessions. A total of 45 people participated, fostering Just Culture and Reporting Culture in the employees' daily operations.
- ANWS participated in the "2020 Annual Airport Safety Management System Training and Symposium" on November 13th, 2020, to share the results of relevant practical operations and Just Culture seminars, as well as exchanging safety management experience.

單位製作公正文化海報
Just Culture posters made by different units

參加 EATMCG 13 視訊會議
13th EATMCG video conference

AES 使用者教育訓練 - 高雄場次
AES user training in Kaohsiung

CANSO 視訊會議
CANSO video conference

七、交流合作與人才培訓

(一) 汲取國際新知

- 109 年因受 COVID-19 疫情影響，民用飛航服務組織（CANSO）相關會議均採視訊方式進行，共參加 8 場次，瞭解國際間飛航服務資訊與最新趨勢。
- 109 年 12 月 10-11 日參加香港主辦第 13 屆非正式東亞飛航管制協調小組會議（EATMCG 13），因 COVID-19 疫情影響，採視訊會議方式，與香港、日本、菲律賓及韓國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。

(二) 強化業務交流

- 109 年 1 月 16 日空軍第六混合聯隊聯隊長魯少將非凡一行 10 人至南部飛航服務園區參訪，並對航管作業進行業務交流。
- 109 年 8 月 11 日與中華航空氣象協會共同舉辦航空氣象專題研討，邀請中央氣象局程副局長家平擔任講座，計有航空公司、民航局、空軍氣象聯隊及總臺共約 80 人與會，會中以「氣象開放資料與智慧應用」為題進行分享及研討，有助於提升本區航空氣象服務品質。
- 109 年 9 月 7、9 日分別於臺北及高雄地區辦理 3 梯次「航空情報服務網（AES）使用者教育訓練」，計有民航局及所屬航空站、桃園機場公司、航空公司、臺灣航勤、桃園航勤及總臺共 189 人參加，會中宣導 ICAO SNOWTAM（冰雪公告）新格式及其申報介面、飛航公告查詢提供圖形化資訊等增修功能，並進行飛航諮詢服務意見交流。

航空氣象專題研討
Symposium on aeronautical meteorology

7. Collaboration and Personnel Training

I. Internalizing international knowledge

- Due to the impact of the COVID-19 pandemic, CANSO held video conferences throughout 2020. ANWS participated in 8 of these meetings to stay up to date with the latest trends in international air traffic services.
- ANWS participated in EATMCG 13 hosted by Hong Kong on December 10th to 11th, 2020. The conference took place online due to the COVID-19 pandemic with representatives from Hong Kong, Japan, Philippines and South Korea. The discussions aimed at enhancing cooperation for air traffic control operations in East Asia, optimizing the flow and safety.

II. Strengthening cooperation and exchange

- On January 16th, 2020, Major General Lu, Fei-fan of the 6th Composite Wing of ROCAF led a delegation of 10 people to visit the South ATS Park and shared experience on air traffic control operations.
- On August 11th, 2020, a symposium on aeronautical meteorology was jointly held with the Chinese Aeronautical Meteorological Association, with Cheng, Chia-ping, the Deputy Director-General of the Central Weather Bureau, giving a lecture. 80 representatives from airlines, CAA, Air Force Weather Wing and ANWS participated. The discussion centered on "Open Weather Data and Smart Applications", helping to improve the quality of aeronautical meteorological services.
- ANWS held three sessions of "AES User Training" in Taipei and Kaohsiung on September 7th and 9th, 2020, with a total of 189 participants from CAA and its airports, Taoyuan International Airport Corporation Ltd., airlines, Taiwan Airport Service Co., Ltd., and Taoyuan International Airport Service Co., Ltd. The new SNOWTAM format and its reporting interface, the graphic information provided by NOTAMs and other new features were shared along with other flight information services experiences.

南部飛航服務園區航管作業室
ATC operation room in South ATS Park

- 109 年 11 月 11 日至 12 月 8 日舉辦 7 場次軍民巡迴研習座談會，分赴花蓮、高雄、臺南、嘉義、清泉崗、空軍作戰指揮部及通航資聯隊，與軍方針對雙方協調事項，進行意見交流與溝通。
- 109 年 12 月 2、7 及 9 日辦理 3 梯次「航空氣象服務網使用者訓練」，計有航空公司、空勤總隊、空軍氣象聯隊、航空站及總臺共 93 人參加，除講授航空氣象系統操作應用、作業現況及宣導國際民航組織（ICAO）最新規範，並進行航空氣象服務意見交流。
- 109 年 12 月 17 日參加民航局辦理之「109 年度國籍航空駕駛員座談會」，向駕駛員說明國機國造飛行測試期間、CTOT 試行作業及 2 座航路長程雷達汰換期間，對飛行及飛航服務監視隔離之影響，並進行意見交流。
- 因應軍方演訓及軍民航機管制，與軍方共召開 25 次會議，研討雙方協調機制，並完成雙方 10 份協議書修正，增進軍民航作業安全。

〔三〕厚植專業實力

◆訓練培育

- 專業訓練：飛航管制類 11 項，合計 122 梯次，共 934 人次；飛航情報類 5 項，合計 17 梯次，共 301 人次；航空氣象類 7 項，合計 32 梯次，共 344 人次；航空通信類 4 項，合計 9 梯次，29 人次；航空電子類（含資訊管理）10 項，合計 53 梯次，共 483 人次。
- 行政知能訓練：尊重人權就從珍愛生命開始、主管培育人員階段能力提升訓練、消防災害防範訓練、員工協助方案健康專題演講、職場霸凌防治實務技巧及案例分析等 18 項課程，合計 23 梯次，共 1,580 人次。

駕駛員座談會
Pilot Symposium

- Seven military-civilian seminars were held from November 11th to December 8th, 2020 throughout Hualien, Kaohsiung, Tainan, Chiayi, Cingcyuangang, Air Combat Command and Air Traffic Control & Information Wing to exchange opinions and strengthen coordination.
- Three sessions of "AMSP User Training" were held on December 2nd, 7th and 9th, 2020 with 93 participants from the airlines, National Airborne Service Corps, Air Force Weather Wing, airports and ANWS. In addition to lectures on the operation and application of AMSP and the current operational situation and publicizing the latest ICAO regulations, opinions on aeronautical meteorological services were also exchanged.
- ANWS participated in the "2020 Domestic Pilot Symposium" organized by the CAA on December 17th, 2020, explaining the impact on aviation and air traffic services caused by the test period of the indigenous advanced jet trainer, the CTOT trial and the replacement period of the two long-range radars. Additional opinions and operational experiences were also exchanged.
- In order to address ATC operations for both civil and military aircraft during the Armed Forces' military exercises, a total of 25 meetings were held with military authorities with 10 agreements amended to ensure all exercises were conducted smoothly and safely.

III. Cultivating Proficiency and Skill

◆ Training

軍民巡迴講習
Military-civilian seminar

- Professional trainings: 11 categories of ATC Training with a total of 122 sessions and 934 participants; 5 categories of Flight Information Training with a total of 17 sessions and 301 participants; 7 categories of Aeronautical Meteorological Training with a total of 32 sessions and 344 participants; 4 categories of Aeronautical Telecommunication Training with a total of 9 sessions and 29 participants; 10 categories of Aeronautical Electronics Training (including Information management) with a total of 53 sessions and 483 participants.
- Administrative competence trainings: a total of 18 courses, 23 sessions with 1,580 participants were conducted focusing on various topics, including respect for human rights starts with cherishing lives, managerial competency enhancement training, fire disaster prevention exercises, health and wellbeing lectures for the employee assistance program, workplace bullying prevention practical skills and case analysis...etc.

◆ 席位查核

為使飛航服務更臻完善，確保同仁適職性，提高飛航管制、飛航情報、航空氣象、航空通信及航空電子等各類人員技術水準，席位查核共完成飛航管制（含航管模擬機） 798 人次、飛航情報 36 人次、航空氣象 80 人次、航空通信 16 人次、航空電子（含資訊管理） 226 人次。

◆ 緊急應變演練

- 109 年 6 月 8 日辦理臺北飛航情報中心飛航公告室業務持續運作演練，共 12 人次。
- 109 年 6 月 12 日辦理「109 年度航空器失事或重大意外事件通報及資料整備演練」，共 54 人次。
- 109 年 9 月 29 日辦理飛航管理自動化系統持續運作兵棋推演，共 42 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 26 梯次，143 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 33 梯次，285 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，33 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 34 梯次，267 人次。

◆ **On-job competency assessment**

To provide high quality air traffic services, and to ensure operational competence while enhancing skills for all staff members (air traffic control, flight information, aeronautical meteorology, aeronautical telecommunication and aeronautical electronics), ANWS completed on-job competency assessments for 798 ATCs (simulator evaluation included), 36 flight information personnel, 80 aeronautical meteorology personnel, 16 aeronautical telecommunication personnel, and 226 aeronautical electronics personnel (including information management personnel).

◆ **Emergency response drills**

- Taipei Flight Information Center's operational contingency drill was held on June 8th, 2020, with 12 participants.
- The "2020 Aircraft Crash or Critical Accident Reporting and Information Preparation Drill" was held on June 12th, 2020, with 54 participants.
- Simulation for the Air Traffic Management Automation System was conducted on September 29th, 2020, with 42 participants.
- Air Traffic Controllers took part in the Contingency Operations Drill for respective facilities, with a total of 26 sessions were completed along with 143 participants.
- Flight information personnel operated backup systems for daily operation once per month to ensure operational integrity in case of equipment failure.
- Various types of emergency response drills for Aeronautical Meteorological personnel were held in a total of 33 sessions with 285 participants. These included: 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…etc.
- 33 staff members took part in 9 different kinds of Aeronautical Telecommunication contingency drills in 2020, including ATMS continuous operation planning, system upgrading and AMHS remote backup drills.
- 34 drills for navigational aids equipment failure and unlawful interference were held for 267 aeronautical electronics staff members.

(四) 推廣飛航服務

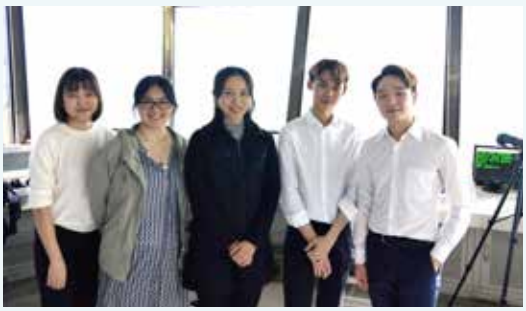
◆ 協助媒體及教育單位

- 協助聯合報辦理專題報導及臺北流行廣播股份有限公司製作廣播節目，分享管制員之工作甘苦及特殊經驗。
- 協助財團法人中華航空事業發展基金會辦理「我的青航時代」暑期航空營；另由黃總臺長麗君至高雄餐旅大學航空暨運輸管理系，分享「空中的 7-11 談臺北飛航情報區飛航服務」內容，鼓勵更多學子投入飛航相關領域。

◆ 提供參訪服務

109 年因 COVID-19 疫情衝擊，限縮參訪頻次，共計 28 梯次 282 人次。國外單位僅澳洲南澳大學，計 1 梯次 4 人次；國內單位計有運輸安全委員會等，計 27 梯次 278 人次。

「我的青航時代」暑期航空營結訓
Graduation from Aviation Summer Camp



南澳大學參訪
Students from the University of South Australia visited Songshan Airport Control Tower

運安會參訪
Taiwan Transportation Safety Board visited North ATS Park

黃總臺長至高雄餐旅大學分享飛航服務工作
Director Huang talking about air traffic services at Airline and Transport Service Management, NKUHT

IV. Promoting Air Traffic Services

◆ Assisting the media and educational institutions

- Assisted United Daily News and POP Radio in creating coverage that shares a deeper insight for ATCs' job experience.
- Organized an Aviation Summer Camp with China Aviation Development Foundation; while Director of ANWS, Huang, Li-chun was invited by the Department of Airline and Transport Service Management of National Kaohsiung University of Hospitality and Tourism to talk about air traffic services in Taipei FIR, encouraging more students to join the industry.

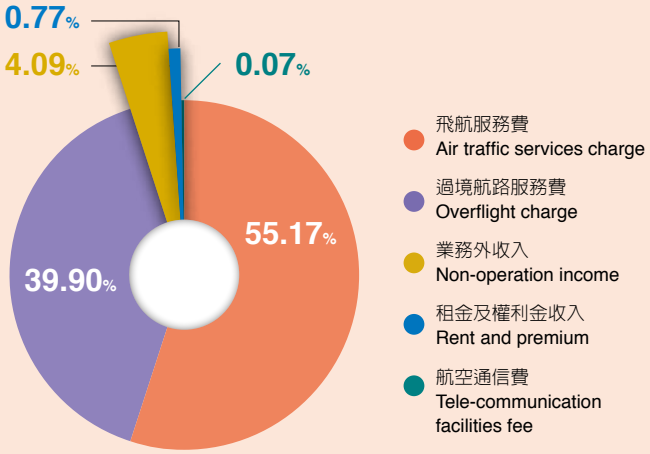
聯合報刊載分享管制員甘苦談
United Daily News coverage on controller's job experience

◆ Facility visits

Facility visits were restricted in 2020 due to the COVID-19 pandemic, with only 282 visitors throughout 28 visits. This included 278 participants (in 27 groups) from the Taiwan Transportation Safety Board…etc. and 4 people (in 1 group) from the University of South Australia.

4 迎向豐盈
Harvesting Rewards
收入支出 Finances

一、收入 Revenue



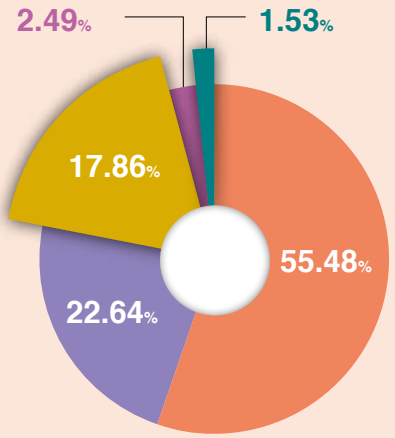
- 飛航服務費 Air traffic services charge
- 過境航路服務費 Overflight charge
- 業務外收入 Non-operation income
- 租金及權利金收入 Rent and premium
- 航空通信費 Tele-communication facilities fee

年度 Year	收入 Revenue
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
109 年 / 2020	2,088,035,488 元 / TWD

註：109 年度總收入 2,088,035,488 元，較 108 年度減少約 52.46%

Note： 2020 total revenue: 2,088,035,488TWD, a 52.46 % decrease compared with 2019.

二、支出 Expenditure



- 用人費用 Salary and wages
- 折舊 Depreciation
- 服務費用 Service expenses
- 材料及用品費 Equipment and raw materials
- 租金及雜項費用 Rent & Non-operation expenses

年度 Year	支出 Expenditure
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
109 年 / 2020	2,395,563,575 元 / TWD

註：109 年度總支出為 2,395,563,575 元，較 108 年度增加約 2.55%

Note： 2020 total expenditure：2,395,563,575 TWD, a 2.55% increase compared with 2019.

三、收支餘絀 Balance

109 年度作業科目 Current expenditures details for 2020	收入 Revenue	支出 Expenditure
飛航服務費 Air traffic services charge	1,152,075,249	
過境航路服務費 Overflight charge	833,060,000	
業務外收入 Non-operation income	85,463,012	
租金及權利金收入 Rent and premium	15,976,727	
航空通信費 Tele-communication facilities fee	1,399,500	
停車費 Parking fee	61,000	
用人費用 Salary and wages		1,328,956,057
折舊 Depreciation		542,449,362
服務費用 Service expenses		427,762,191
材料及用品費 Equipment and raw materials		59,711,342
業務外費用 Non-operation expenses		18,039,071
租金、償債與利息 Rent, debt repayment and interest expenses		8,741,140
稅捐與規費 Tax and charges		8,444,081
會費、捐助、補助、分攤與交流活動費 Membership fees, donations, reimbursements, shared costs and public relations expenses		1,460,331
合計 Total	2,088,035,488	2,395,563,575

短絀 Deficit **307,528,087** 元 /TWD

一、持續完善安全管理系統，提升飛航服務安全水準

- 賡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。
- 啓用並落實飛航服務安全管理資訊系統及總臺設備與建物管理系統，協助危害識別及風險管控作業，提升維管工作效率及縮短維護時效。
- 賡續辦理專案評估與督查，進行管制員能力導向訓練與評估，研修實務訓練教官遴選考核及管制員席位查核方法，並研議辦理航電單位專案查核，提升緊急應變處理能力，確保適職性。

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、多向導航臺、歸航臺、定位臺及測距儀設備案，提升進場及航路導航設備之可靠度與穩定性。
- 賡續辦理汰換鵝鑾鼻、三貂角等 2 座長程航路雷達與松山、花蓮及臺東等 3 座終端航管雷達案，確保監視設備妥善率及穩定度。
- 賡續辦理飛航管理自動化系統期中升級案，增進系統設備穩定性與安全性，確保飛航安全。
- 辦理「汰換臺東及離島 7 座機場自動氣象觀測系統（AWOS）採購案」及汰換金門、澎湖、臺中及臺東機場跑道助航燈光與滑行道指示牌，確保機場設備妥善率與可靠度。

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

- Continue to promote SMS, implement safety risk management, monitor KPIs, review safety policies and objectives, and refine safety control and management to foster ANWS's safety culture.
- Launch and implement the Safety Management Information System and the Equipment and Building Management System to assist in hazard identification, risk control operations, and to improve maintenance efficiency and reduce maintenance periods.
- Continue to conduct project evaluations and inspections, carry out Competency Based ATC Training, review the selection and assessment of ATC On-the-job training instructors, as well as formulating an evaluation scheme for engineering units to enhance emergency response capabilities and ensure competency.

2. Promote 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 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 integrity of surveillance equipment.
- Continue with the mid-life upgrade of the Air Traffic Management System and Digital Voice Communication Switching System for reliability and stability enhancement, ensuring of aviation safety.
- Carry out the "AWOS Procurement for 7 Airports in Taitung and Outlying Islands", as well as replacing the airport navigational lighting and taxiway signs at Kinmen, Penghu, Taichung and Taitung Airports to ensure the soundness and reliability of airport facilities.

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。
- 持續辦理內、外部顧客滿意度調查，精進各項飛航服務措施。
- 持續配合桃園國際機場三航廈、跑滑道及停機坪整建工程，調整航管及航電相關作業，確保機場正常運作。

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（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（ICAO）之最新發展趨勢。
- 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，辦理產官學研討會廣納意見，做為建置本區新世代飛航管理系統之參考。
- 依循最新國際民航組織規範及建議作法，推行跑道狀況報告（RCR）案、「臺北飛航情報區新一代航管系統建置先期計畫案」、「航空氣象現代化作業系統汰換及更新計畫」及研提新一代航空情報服務系統中長程計畫等，確保本區飛航服務作業符合國際發展趨勢。

3. Focus on user feedback to improve Air Traffic Services

- Strengthen interactions and communication between with civil aviation operators and military authorities, while enhancing the functions of the Aeronautical E-Service (AES) and Aeronautical Meteorological Service Page (AMSP). Furthermore, continue to organize user training and relevant meetings to ensure the provision of sophisticated and customized services to meet with user needs.
- Continue to carry out internal and external satisfaction surveys to improve air traffic services.
- Continue to adjust air traffic control and engineering operations in line with the construction projects for the terminal 3, runway, taxiway and apron at the Taoyuan International Airport to ensure normal operations.

4. Constant monitoring and analysis of global trends to align Air Traffic Services in line with international standards

- Continue to attend CANSO and EATMCG meetings in order to stay on top of regional developments and actively keep track of new trends from ICAO.
- Continue to stay updated with ICAO's Global Air Navigation Plan (GANP) and Aviation System Block Upgrades (ASBU), as well as organizing industry-government-academic seminars to gather opinions and suggestions for the new-generation air traffic management system in Taipei FIR.
- To stay in line with global aviation development trends, ANWS will continue adhering to the latest ICAO regulations and recommendations by promoting the RCR project, planning for the new-generation air traffic management system of Taipei FIR, Advanced Operational Aviation Weather System Renewal and Update (AOAWS-RU), as well as developing mid- and long-term plans for the new-generation aeronautical information service system.

2020 1 月

JAN 02、07 08、17

方副局長志文視察金門助航臺、花蓮助航臺、恆春助航臺、桃園塔臺園區及南北部飛航服務園區，並致贈春節慰問金。

Deputy Director General of CAA, Fang, Chih-wen visited Kinmen Navaids Site, Hualien Navaids Site, Hengchun Navaids Site, Taoyuan Airport New Air Traffic Control Tower, North and South ATS Parks, and distributed Chinese New Year subsidies.

JAN 03、08 13、22

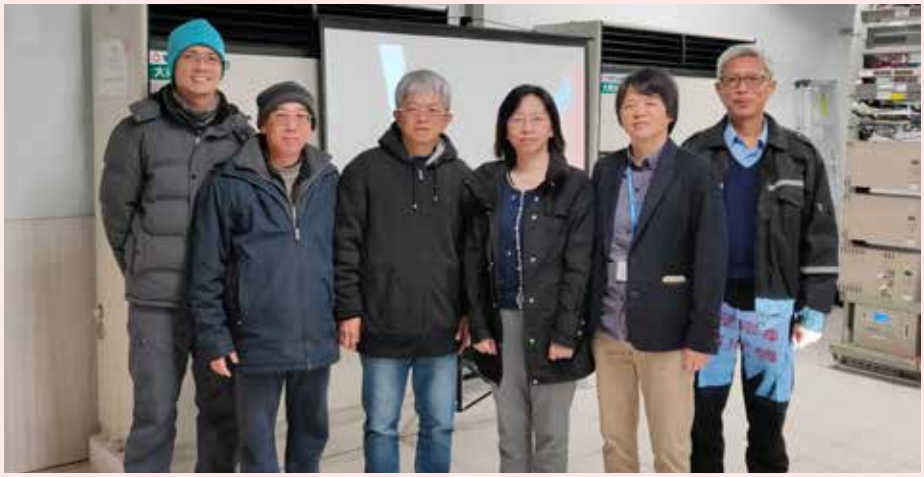
林局長國顯視察嘉義助航臺、臺南助航臺、臺東助航臺、三貂角雷達臺及濱江地區，並致贈春節慰問金。

Director General of CAA, Lin, Kuo-shian visited Chiayi Navaids Site, Tainan Navaids Site, Taitung Navaids Site, Sandiaojiao Radar Site and Binjiang area, and distributed Chinese New Year subsidies.

JAN 13、16 17、21

何副局長淑萍視察馬公助航臺、馬祖助航臺及大屯山助航臺，並致贈春節慰問金。

Deputy Director General of CAA, Ho, Shu-ping visited Magong Navaids Site, Matsu Navaids Site and Datunshan Navaids Site, and distributed Chinese New Year subsidies.



2 月

FEB 10、17

完成汰新並啓用南竿、北竿、恆春及松山、金門、馬公、豐年等 7 座塔臺數位語音交換系統（DVCSS），提高管制員與航機通話品質及系統裝備妥善率，確保飛航服務品質。

Digital Voice Communication Switching System (DVCSS) launched in Beigan, Nangan, Hengchun, Songshan, Kinmen, Magong and Fongnian Airport Control Towers, enhancing the availability of equipment and the clearance of communication, and ensuring the quality of air traffic services.

3 月

MAR 12

啓用松山機場跑道中心線燈，強化航機起降識別，確保航機操作安全。

Runway centre line lights of Taipei Songshan Airport have been launched. The lights benefit the identification for aircraft takeoff and landing, ensuring the operational safety of aircrafts.

MAR 18

桃園裝修區臺副區臺長康智育調陞航電技術室主任。

Taoyuan Aviation Facilities Sector Deputy Chief, Grant Kang was promoted to the Engineering Office Chief.

MAR 26

本區與香港飛航情報區縮短 KAPLI 航點交接管間隔，兩架同速航機由 30 浬縮減為 20 浬；自本區至香港後機快於前機者，由非雷達隔離改為 40 浬，增進雙方航路流量，提升飛航服務品質及飛航安全。

The separation interval reduction between Hong Kong and Taipei FIR over the handover point KAPLI was activated by reducing the separation between traffic with the same speed from 30 NM to 20 NM. Regarding the preceding traffic that is slower than the following one, the separation in-between is reduced from non-radar to 40 NM. This change will increase the air traffic flow, improve the quality of air traffic control services, and strengthen the aviation safety between the two parties.

4 月

APR 01

本總臺自 4 月 1 日至 6 月 8 日因應 COVID-19 疫情，值班人員實施分組排班，確保飛航服務正常運作。

From April 1st to June 8th, ANWS implemented split operations for all on site staff members to ensure the integrity of flight services in response to the COVID-19 pandemic.

5 月

MAY 29

國家人權博物館主計室主任謝慧潤調任本總臺主計室主任。
Chief of Accounting and Statistics Office of National Human Right Museum, Hsieh, Hui- jun, was succeeded to the Chief of Accounting and Statistics Office of ANWS.

6 月

JUN 17

汰換啓用綠島特高頻多向導航臺設備（VOR），確保航機操作安全性，提高設備妥善率與可靠度。
VOR in Ludao has been replaced, ensuring the operational safety of aircrafts, and improving the availability and reliability of equipment.

8 月

AUG 01

舉辦總臺 109 年度桌球聯誼賽，共計 134 人參加。
Hosted 2020 Table Tennis contest, with a total of 134 participants.

AUG 03

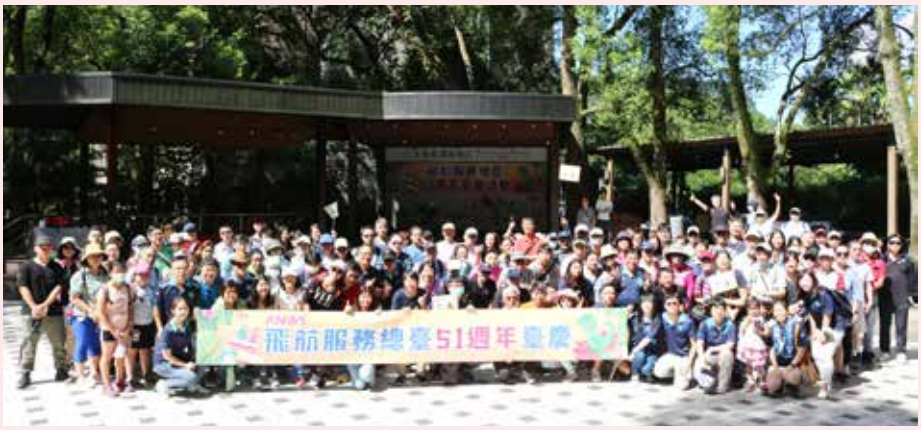
航空氣象服務網提供太空天氣、熱帶氣旋及火山灰等資訊查詢服務，提升航空氣象服務品質。
Information regarding space weather, tropical cyclones, and volcanic ash services has been available on Aeronautical Meteorological Service Page.

AUG 25

航空情報服務網（AES）新增 ICAO 新格式 SNOWTAM 申報介面及航行警示圖新增檢視「UAS ONLY」功能，提供精緻化之飛航情報服務。
AES enhanced function of ICAO new format SNOWTAM proposal and on Airspace NOTAM view UAS NOTAM only to provide a more comprehensive Flight Information service.

AUG 29

舉辦北部地區 51 週年臺慶活動「三峽森活老街巡禮一日遊」，共計 172 人參加。
"The Great Roots Original Woods and Sanxia Old Street trip" was held in northern area to celebrate the 51st anniversary of ANWS, with a total of 172 participants.



9 月

SEP 14

民航局企劃組陳組長昭諭一行 9 人至本總臺進行 109 年度為民服務績效實地評鑑。
CAA Planning Division Director, Chen, Jau-yuh led 9 staffs to visit ANWS for 2020 Citzen-Service Assessment.

SEP 19

舉辦南部地區 51 週年臺慶活動「屏東小琉球自然生態之旅」，共計 60 人參加。
"Liuqiu Natural Ecological Tour" was held in southern area to celebrate the 51st anniversary of ANWS, with a total of 60 participants.

SEP 21

因應菲律賓白金航空公司試飛作業，屏東縣潘縣長孟安一行 4 人至恆春機場管制臺表達歡迎之意並瞭解飛航服務作業情形。

For the trial run operated by Philippine Platinum Skies, from Manila to Hengchun, Pingtung Magistrate, Pan, Men-an led 4 members to visit Hengchen Airport Control Tower to welcome the quest and understand air traffic services operation.

10 月

OCT 15

榮獲民航局 109 年公文績效檢核第 1 名。

ANWS received the first place honor of "Evaluation of Document Performance" from CAA.

OCT 16

109 年北部退休人員聯誼餐會於大直典華旗艦館舉行，共計 131 人參加。

The 2020 northern area annual retiree banquet was held in Dazhi Denwell, there were total 131 retiree seniors presented.

OCT 20

本總臺副總臺長蔡宗穎調任民航局航管組副組長，所遺職缺由民航人員訓練所副所長許智婷調任。

Deputy Director of ANWS, Tsai, Tsung-ying, succeeded the Deputy Director of Air Traffic Services Division, CAA; meanwhile, Deputy Director of Aviation Training Institute, Hsu, Chih-ting succeeded Tsai's position in ANWS.

OCT 23

109 年南部退休人員聯誼餐會於高雄海寶大飯店舉行，共計 30 人參加。

The 2020 southern area annual retiree banquet was held in Hai Pao Restaurant Group, there were total 30 retiree seniors presented.

11 月

NOV 18

榮獲民航局 109 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.

NOV 21

舉辦總臺盃慢速壘球錦標賽，共計 90 人參加。
Hosted 2020 the ANWS Cup Slow Pitch Softball Tournament, with a total of 90 participants.

NOV 23

辦理 109 年飛航管制員飛行專業知能訓練第 1 梯次開訓典禮，計將開辦 2 梯次，共 20 人參加。
Hosted the 2020 opening ceremony of ATC flight expertise training program, with a total of 2 sessions and 20 trainees.

12 月

DEC 03

汰換啓用恆春特高頻多向導航臺設備 (VOR)，提高設備可靠度，確保飛航服務品質。

The replacement of Hengchun VOR was completed and commissioned for reliability enhancement, ensuring quality of air traffic services.

DEC 08

啓用綠島機場跑道頭 / 末端燈、跑道邊燈與跑道頭識別燈，並汰換直昇機坪邊燈，強化機場跑道識別度，確保航機操作安全。

The Runway threshold/end lights, Runway edge lights, Runway threshold identification lights and helipad lights of Ludao Airport have been launched. The lights benefit runway threshold identification for aircraft landing, ensuring the operational safety of aircraft.

DEC 24

黃總臺長麗君榮獲 109 年行政院模範公務人員殊榮。

Director of ANWS, Huang, Li-chun received 2020 Civil Service Excellence Awards of the Executive Yuan.

安全領航

交通部民用航空局 飛航服務總臺

空中的 7-11

ANWS

一、助航裝備 Navigation Equipment

名稱 Name	數量 Number	設置地點 Location
歸航臺 (NDB) Non-Directional Beacon(NDB)	10 套 10 sets	大屯山、金門、南竿、後龍、恆春、臺南西港、馬公、花蓮、綠島及蘭嶼等處 Mt. Datun, Kinmen, Nangan, Houlong, Hengchun, Tainan Xigang, Magong, Hualien, Ludao and Lanyu
定位臺 (LOCATOR) LOCATOR	10 套 10 sets	高雄、臺北 (2 套)、花蓮、臺東知本 (2 套)、清泉崗、恆春、北竿及嘉義等處 Kaohsiung, Taipei (2 sets), Hualien, Taitung Zhiben (2 sets), Cingcyuangang, Hengchun, Beigan and Chiayi
特高頻多向導航臺 (VOR) 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、干呎牌 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、干呎牌 (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、干呎牌 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、干呎牌 (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、干呎牌 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、干呎牌 (全部由軍方維護) Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (MALSR-36R、MALSF-18L), Precision approach path indicator (PAPI-18L/36R), Runway guard lights, Signs, Runway distance remaining sign (all maintained by the Military)	臺南機場 Tainan Airport

種類 Facilities	設置地點 Location
跑道邊燈、跑道頭 / 末端燈、滑行道邊燈、進場燈 (MALSR-04、ALS-22)、跑道頭識別燈 (RTIL-22)、精確進場滑降指示燈 (PAPI)、跑道警戒燈、指示牌、千呎牌 Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (MALSR-04、ALS-22), Runway threshold identification lights (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、千呎牌 (除 W(含 W1~W5) 滑行道邊燈、指示牌由本總臺維護外，其餘由軍方維護) Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (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、千呎牌 Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (SSALR-06、MALSF-24), Precision approach path indicator (PAPI-06), Runway guard lights, Signs, Runway distance remaining sign	金門尚義機場 Kinmen Shangyi Airport
跑道邊燈、跑道頭 / 末端燈、滑行道邊燈、進場燈 (MALSR-36、ALS-18)、精確進場滑降指示燈 (PAPI)、千呎牌 (全部由軍方維護) Runway edge lights, Runway threshold/end lights, Taxiway edge lights, Approach lighting systems (MALSR-36、ALS-18), Precision approach path indicator (PAPI), Runway distance remaining sign (all maintained by the Military)	嘉義水上機場 Chiayi Shuishang Airport
跑道邊燈、跑道頭 / 末端燈、跑道頭識別燈 (RTIL)、簡式精確進場滑降指示燈 (APAPI)、千呎牌 Runway edge lights, Runway threshold/end lights, Runway threshold identification lights(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)、千呎牌 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、千呎牌 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、千呎牌 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、千呎牌 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
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) Runway edge lights, Runway threshold/end lights, Runway threshold identification lights(RTIL), 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.

三、機場及航路測報、預報與守視
Weather observations, forecasts and watches

業務類別 Category	工作項目 Items	工作成果 Results				
		105 年 2016	106 年 2017	107 年 2018	108 年 2019	109 年 2020
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)	112,432	107,878	105,564	107,131	**104,940**
	局屬民航機場天氣報告 CAA Civil Airport Weather Report	115,157	111,019	108,851	110,405	**108,239**
	民航機場趨勢預報 Civil Airport Trend Forecast	107,689	107,346	105,567	107,335	**104,847**
	民航機場天氣警報 Civil Airport Weather Warning	250	176	150	217	**160**
	民航機場低空風切警報 Civil Airport Low Level Wind Shear Warning	1,028	974	855	915	**764**
	桃園機場氣象雷達觀測（註 2） Taiwan Taoyuan International Airport Weather Radar Observation (Note 2)	96,487	93,261	83,573	83,244	**76,680**
	合 計 Sub-total	436,749	419,667	405,902	411,352	395,461
航路預報 Route Forecasts	各種分析天氣圖表 Various Analytical Weather Charts	41,183	41,093	40,908	40,476	**40,810**
	高空風溫度預報圖 High Altitude Wind Temperature Forecast Chart	30,741	30,195	27,719	43,306	**30,699**
	顯著天氣預報圖 Significant Weather Forecast Chart	5,856	5,842	5,840	5,840	**5,856**
	合 計 Sub-total	77,780	77,130	74,467	89,622	77,365

業務類別 Category	工作項目 Items	工作成果 Results				
		105 年 2016	106 年 2017	107 年 2018	108 年 2019	109 年 2020
機場預報 Terminal Aerodrome Forecasts	編發機場預報 Issuing Terminal Aerodrome Forecast(TAF)	15,152	16,344	16,351	16,361	**16,428**
	機場預報修正 TAF AMD TAF Revision(TAF AMD)	496	355	370	643	**709**
	合 計 Sub-total	15,648	16,699	16,721	17,004	17,137
天氣守視 Weather Watches	顯著天氣資訊 Significant Weather Information	1,874	1,372	1,402	1,661	**1,427**
	飛機報告 Aircraft Report	609	554	495	477	**363**
	本區機場天氣報告 Regional Airport Weather Report	135,532	145,420	145,362	342,314	**415,316**
	AMHS 氣象電報 AMHS Weather Dispatch	6,108,760	6,705,328	7,206,573	8,579,941	**7,905,883**
	短時預報 Short-term Forecast	1,464	1,460	1,460	1,460	**1,464**
	天氣影像圖 [註 3] Weather Graphics (Note 3)	784,005	1,237,968	1,238,208	1,285,585	**1,297,682**
	民航機場颱風警報 Civil Airport Typhoon Warning	315	341	415	234	**202**
	合 計 Sub-total	7,032,559	8,092,443	8,593,915	10,211,672	9,622,337
	總 計 Total	7,562,736	8,605,939	9,091,005	10,729,652	10,112,300

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. The supply of Terminal Area Forecast (TAF) coordinates with airport operating time.

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.

四、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)

五、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 Switching 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、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

六、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)	26 套 26 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 臺 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

七、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
塔臺自動化系統 (TAS) Tower Automation System(TAS)	1 套 1 set	桃園國際機場塔臺園區 Tower Park of Taiwan Taoyuan International Airport
360 度塔臺模擬機系統 360-Degree Tower Simulator	1 套 1 set	桃園國際機場塔臺園區 Tower Park of Taiwan Taoyuan International Airport

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

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

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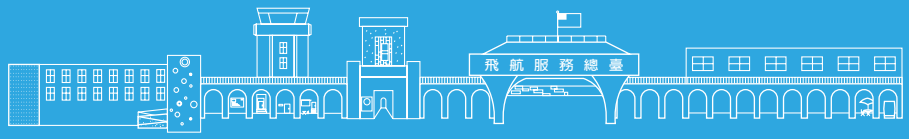

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