

# 瞭解國際民航組織

## 從內部看國際民用航空組織

歐文 譯

### 美好的回憶

自從1970年初期以來，通用航空已獲得令人讚賞之進展。由於數項進步，包括更先進之飛機製造技術、航電、導航、儀表及發動機系統之運用，通用航空活動已變得愈加先進複雜。當我約40年前開始航空修護技師事業時，事情很簡單，如果你的飛機上配備有雙重通信無線電及VOR，就可以放心的起飛。個人有幸在伊利諾州北部的一個家族企業之固定基地航運公司(Fixed Based Operator, FBO)展開個人的事業，現在依然清晰記得那些放單飛的人將襯衫掛在辦公室牆上、通用航空業的友人、在威斯康辛奧希克希(Oshkosh)的年度朝聖之旅、及空運很棒的鬆餅早餐至機場享用等美好記憶。

當時，這家固定基地航運公司(FBO)提供飛機租賃、飛行教學及飛機修護，並且依照14CFR Part 135規範執行商業包機業務。現在仍記得在Piper Cherokee Six飛機裝載機具準備前往加拿大執行魚業包機之過程。當時與大家一樣，對於這個僅距離90哩外的組織之歷史及其所確立之規範讓前述所提之各種飛行得以進行所知有限。

### 愛K喔(ICA0)?

你現在也許認識並瞭解美國聯邦航空管理署(FAA)制定標準，並依這些標準頒發認證，及執行監視以確保在國家空域系統(National Airspace System, NAS)內之作業安全。你可能甚至假設其他國家也有其執行這些職能之組織。你是對的，加拿大的「FAA」稱為加拿大運輸民航局(Transport Canada Civil Aviation)。德國的民航管理單位(Lufthahrt-Bundesamt)可翻成聯邦民航辦公室。在澳洲，民用航空安全局(Civil Aviation Safety Authority)為負責管理單位。

知道了這些後，應不難瞭解一個以達成民用航空安全及永續發展為願景之全球組織之價值。這正是國際民航組

織之宗旨。

什麼?所知不多?那麼現在就來幫你複習一下有關國際民用航空組織的知識，(最常用的縮寫發音為愛K喔)。

### 該組織為何?

國際民航組織係聯合國所屬的一個專門機構，由191個會員國組成，並作為所有與民航有關領域之合作的平台。該組織係由三個部門所組成，包括

- 大會：維持各會員國均有一代表，並透過標準及建議措施確立政策。
- 理事會：由36個會員國所組成並作為該組織之管理機構，及
- 秘書處：由一位秘書長所領導，並下轄五個部門。

大會是由會員國及有時候像是梵蒂岡城這樣的非會員國代表所組成。會員國名單是浮動的，因為一旦新的會員在民航領域扮演角色時即可加入成為會員國。新近才成為會員的南蘇丹共和國即是於2011年底才正式加入成為國際民航組織的第191個會員國。

大會每三年集會一次並由理事會召開。上次在2010年召開的第37會期是在蒙特利爾舉行。該會期中所獲致的主要成果之一就是確立替代燃油運用的架構及創設所有飛機之二氧化碳排放標準。開始覺得有點熟悉了嗎?

36個會員國所組成的理事會係大會之管理機構。它的會員國是經由每三年選舉所產生，並區分成三大類以確保所有會員國獲得平等對待且代表性獲得保障。第一類包括在航空運輸方面被認為具有重要航太意義且扮演重要角色的國家。美國、俄羅斯邦聯、日本及巴西即是其中幾個案例。第二類包括為國際設施之提供做出最大貢獻之國家。西班牙、新加坡及沙烏地阿拉伯即屬此類。最後的第三類會員國則是要確保各地地理區域在理事會中均有其代表性。古巴、韓國及烏干達即屬此類。理事會具有許多職能，包

括向大會提交年度報告，貫徹執行大會之指令(directives)及為ICAO之財務提供行政監督。理事會主席一職係由每三年選舉產生。墨西哥的岡撒雷斯(Roberto Kobeh Gonzalez)先生是現任理事會主席。

誠如先前所提，秘書處是由五個部門所組成。秘書處最重要的工作就是為其所屬部門及整個ICAO提供各種行政服務。對任何在聯邦政府工作者而言，它與計畫部門(plans and programs section)相似。

## 該組織何時組成？

ICAO開始於1944年，當時美國決定召開會議以討論民航相關議題。這些議題係因航空旅行快速成長，而且愈來愈多的國際航線所致。在相當程度上這是拜二次世界大戰對航空發展之驅使所賜。

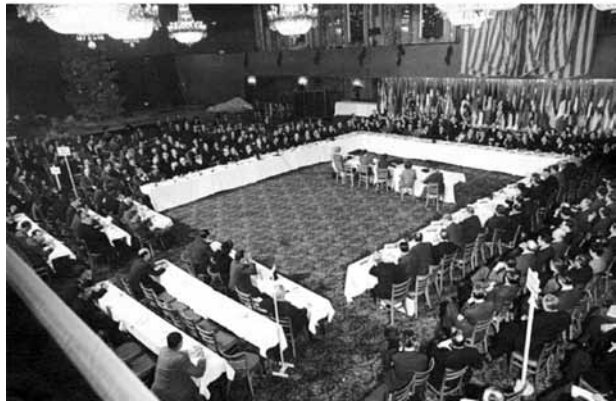
第一次大會是在伊利諾州的芝加哥舉行，當時有55個被認為是航空先驅的盟國或中立國獲得邀請，其中52個國家出席。這次「國際民用航空大會」或當時所稱「芝加哥公約」的焦點是要討論給予外國航空公司所欠缺之讓步，及允許外國飛機進入、中轉及離開他國之空域所欠缺之協議。此外，該大會也為國際所承認之空中航行符號的規定與規則奠定基礎，而這些規定與規則正是全球共同空中航行系統的觸媒。

在大會結束前，現代ICAO之基礎及憲章就已奠定，就等所需之26票完成批准程序，而臨時國際民用航空組織(Provisional ICAO)也已然成立。臨時國際民航組織運作約兩年直到相關準則於1947年3月5日獲得批准，並於1947年4月4日正式生效，而這也是國際民航組織的正式「生日」。公約文件係一具有法律拘束力之國際條約，內容律定有關空域、航空器註冊及安全之國際規則，並詳列締約國有關空中旅行之權益。目前公約內容係由96條條文所組成，並以英文、法文、西文及俄文等4種文字出版。

## 該組織之功能為何？

目前ICAO負責確保所有會員國在航空安全及保安方面的運作相容。該組織亦負責訂定國際空中航行之原則及技術，及培養國際空中運輸之規劃及發展以確保安全有序的成長。ICAO定期修訂18項內含各種支持公約之標準及建議措施的附約，並常討論及發展數項領域之規則，包括國際民航之人員證照、航空器運作、適航性、空中航行、及過境手續等。

ICAO定義國際空中航行安全或規定所需之任何規格的標準，使會員國據以遵從該公約。換言之，標準具有強制



力。另外ICAO定義被認為最符合國際空中航行最大利益之任何規格的建議措施，使締約國據以盡力遵守。建議措施係屬高度鼓勵但仍屬自願性質。

在此提出一個ICAO的標準及建議措施如何影響美國的例子。誠如各位所知，FAA最近改變指示操作人員之「滑進位置並保持」(taxi into position and hold, TIPH) 術語。這個一般的ATC指令對來訪的國際民航人員並沒有那麼容易瞭解，因而引發不必要的風險。新的指示「排隊並等待」(line up and wait) 或稱LUAW係透過ICAO論壇投票表決所致，這項用詞也因而改變。FAA與其他未採用這項術語的會員國都跟著改變。

有關會員國法規與ICAO標準有所差異時，ICAO確實有一項處理規定，根據公約第38條規定，會員國可提出「差異」之申請。差異之承認係透過會員國間之層級來處理，但舉例而言，有時候美國規定與ICAO標準之差異並不會獲得其他國家之承認。

除了律定規範外，ICAO亦訂定全球層級之航空事故調查規定。這對美國所擁有及操作之航空器在美國領土上似乎沒有什麼大不了，但萬一失事事件發生在德國，而航空器係由美國人所雇用且由美國飛行員所駕駛，而機上有荷蘭、巴西及南非等國籍之乘客，這時你就會瞭解確立管轄權將相當棘手。

## 該組織位於何地？

ICAO總部位於加拿大魁北克的蒙特利爾市。此外，ICAO(類似FAA在各地的飛航標準區域辦公室，或稱FSDO)尚有數個延伸組織，亦即將全球區分成七大區域。你可能對某些區域感到興趣，像是總部位在法國巴黎的歐洲及北大西洋區域(EUR/NAT)，及總部位於墨西哥墨西哥市的北美、中美及加勒比海區域(NACC)。

## 為什麼要關心？

在現今全球民航架構中，每隔數秒就有一架飛機在地球表面的某一個地方起飛或降落。這是一天24小時、一年365天的實際情況，而通用航空是其中一大塊。為了讓你漂亮的Cessna 172飛機能夠飛到渥太華去釣梭子魚，你必須遵守ICAO相關規定。要不然，你可能會在邊界被阻攔，也就是被止進入國際空域。或更糟的是，你可能順利抵達目的地，然後卻發現自己陷入困境被禁止飛回。

在某些情況下，問題可能與你的飛機檢查結果有關。其他民用航空當局可以依公約第16條規定對你及你的私人、企業或商用飛機進行停機坪檢查。這種檢查的主要目的在確定你在別國領空飛行中確實遵守適用之國際飛安標準。再者，在做飛行準備時，你必須注意到美國與目的地國的一些差異。這些差異資訊在各處均可獲得，包括在每個附約文件的背面及各國航空資訊公告(AIP)。

ICAO所制定的各種標準讓所有民用航空主管當局據以評量並為彼此讓步。其他國家有權期盼你遵守各種規定。在美國，我們遵守FAA所提供之各種規則，但事實上當你想飛往巴哈馬拿騷或附近，這些標準就沒有什麼意義，而巴哈馬的規則在美國也沒有管轄權。當談到該國允許什麼樣的標準時，那個國家必須同意採用這些標準。他們透過ICAO來進行，我們也是透過ICAO來進行。

就我所知，位於伊利諾州北部的那個固定基地航運公司(FBO)仍由同一家族所管理，且經營成效不錯，並已經變成一家更大的公司，而且擁有一個小機場。除了國內的通用航空事業外，他們也取得執行國內及國際線的行政專機包機業務。當那架 Cherokee Six飛機早已成歷史，航空站內的新血輪及停機坪上的新飛機仍有責任確保符合適當的國際民用航空作業要求。

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## ICAO的18個附約

18個附約中的幾個附約內容規範了通用航空器之國際營運，無論私人或企業而且含括各種不同之議題。第一附約是關於人員證照，第二附約是有關空中規則。第六附約Part II是有關通用航空飛機之規定，而Part III則是有關直升機之規定。第八附約是關於持續航空器適航性。從ICAO網站的文件中可以獲得或是[www.icao.int/Documents/Annexes\\_booklet.pdf](http://www.icao.int/Documents/Annexes_booklet.pdf)。

以下為ICAO目前運用中之附約：

1. 人員證照
2. 空中規則
3. 國際空中航行的氣象服務
4. 航空圖表
5. 空中與地面作業使用之計量單位
6. 航空器之操作
7. 航空器國籍及註冊標誌
8. 航空器之適航性
9. 便利
10. 航空通信
11. 空中交通服務
12. 搜索及救援
13. 航空器失事及意外調查
14. 機場
15. 航空資訊服務
16. 環境保護
17. 保安-確保國際民用航空免於非法干擾行為
18. 危險貨物的航空安全運輸 ✈

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# In the Know with ICAO

## An Inside Look at the International Civil Aviation Organization

Kim Miller

### Back in the Day Bliss

It is amazing how general aviation has progressed since the early 1970s. In my time, general aviation activities have become increasingly sophisticated due to several things, including the use of more advanced aircraft manufacturing techniques, avionics, navigation, instrumentation, and powerplant systems. When I started my career as an aviation maintenance technician almost 40 years ago, things were pretty simple. If you had dual comm radios and VORs in your airplane, you were pretty much good to go. I was fortunate to start my career at a small family-owned Fixed Based Operator (FBO) in Northern Illinois. I fondly remember the shirt tails hanging on the office wall from those who soloed, my GA friends in the community, the annual pilgrimage to Oshkosh, and the fly-ins at the airport with the great pancake breakfast.

At that time, the FBO offered aircraft rentals, flight instruction, and aircraft maintenance, and performed commercial charters under 14 CFR Part 135. I can still recall the process of loading a Piper Cherokee Six with gear for the fishing charters to Canada. I knew little (as did everyone else) about the international history and obligations established a mere 90 miles away that enabled those flights.

### “Eye-Kay-Ohhh?”

Now, you probably recognize and understand how the FAA sets standards, issues certifications on the basis of those standards, and conducts surveillance to assure continued operational safety in the National Airspace System (NAS). You might even go so far as to assume that other countries have their own organizations to perform these functions for their nations. You would be

right. Canada’s “FAA” is called Transport Canada Civil Aviation. Germany has the *Lufffahrt-Bundesamt*, which roughly translates into the Federal Aviation Office. And in Australia, the Civil Aviation Safety Authority is their regulating office.

So with all this in mind, it should be easy to recognize the value of a greater, global organization whose vision it is to achieve safe, secure, and sustainable development of civil aviation. That is just what ICAO does.

What? Don’t know too much about it? Well here is a chance to brush up on your knowledge of the International Civil Aviation Organization, (most commonly shortened to the phonetically pleasing “eye-kay-oh”).

### WHO (are these guys?)

The International Civil Aviation Organization is a specialized agency of the United Nations and is a conglomeration of 191 member States that serves as the forum for cooperation in all fields of civil aviation. The organization is comprised of three branches:

- The Assembly, which maintains a representative from each State and establishes policy through standards and recommended practices;
- The Council, made up of 36 States and serving as the governing body for the organization; and
- The Secretariat, headed by a Secretary General and organized into five divisions.

The Assembly consists of representation from each of the established members and, at certain times, from non-member States such as Vatican City. The list is fluid, as new members can be added once they have a presence in the aviation arena. The newly established State of the Republic of South Sudan formally joined as

recently as late 2011 to become ICAO's 191st member.

The Assembly meets every three years, and is convened by the Council. The last session was number 37 and was held in Montréal in 2010. One of the major outcomes from that session was the establishment of a framework for alternative fuel use and the creation of a carbon dioxide standard for all aircraft. Starting to sound familiar?

The 36-member Council is the governing body of the Assembly. Its members are elected every three years. It is divided into three major parts to ensure equal and quality representation for all. Part I includes States typically considered to be of great aeronautical significance and major players in air transport. The United States, the Russian Federation, Japan, and Brazil are a few examples. Part II includes States that have made the largest contributions to providing international facilities. Examples include Spain, Singapore, and Saudi Arabia. Lastly, Part III members ensure geographical representation among the voting Council. This section includes Cuba, the Republic of Korea, and Uganda, to name a few. The Council has numerous functions, including submitting annual reports to the Assembly, carrying out Assembly directives, and providing administrative oversight for ICAO finances. The president of the Council is also elected every three years. Mexico's Roberto Kobeh González is the current Council president.

As mentioned before, The Secretariat consists of five divisions. The most important thing to know about this arm of ICAO is that it provides administrative and service functions for its divisions and for ICAO as a whole. For anyone who has worked in the federal government, this office is something akin to a plans and programs section.

## **WHEN (were they formed?)**

ICAO got its start back in 1944, when the United States decided to hold a conference in order to discuss pertinent issues in civil aviation. These issues arose from the booming growth of air travel, with more routes crossing international lines. This was due largely in part



**37th ICAO Assembly held in 2010**



**Chicago Conference of 1944**

to the advancements in aviation driven by World War II.

The first convention was held in Chicago, Illinois, and invitations were sent to 55 U.S. allies or neutral party States who were considered to be aviation pioneers. Fifty-two States attended. The focus of this "Convention on International Civil Aviation," or "Chicago Convention," as it was known then, was to discuss the lack of concessions granted to foreign airlines, as well as the lack of established agreements permitting foreign planes to enter, transit and exit another's airspace. In addition, the convention laid the foundation for a set of rules and regulations regarding internationally recognized air navigation symbols, which was the catalyst for the common air navigation system throughout the world.

By the end of the convention, the foundation and constitution for the modern day ICAO had been laid out and, pending the 26 votes that were required for ratification, the Provisional International Civil Aviation Organization (PICAO) was established. PICAO functioned for roughly two years until the doctrines were

ratified on March 5, 1947. They went into effect April 4, 1947, which is the official “birthday” of the International Civil Aviation Organization. The Convention document is a legally binding international treaty that establishes the international rules relating to airspace, aircraft registration, and safety. It details the rights of the signatories in relation to air travel. It is presently comprised of 96 Articles, and is published in four different languages: English, French, Spanish, and Russian.

## **WHAT (do they do?)**

Today, ICAO is responsible for ensuring that all of its States are working in similar terms of aviation safety and security. The organization is responsible for codifying the principles and techniques of international air navigation, and for fostering the planning and development of international air transport to ensure safe and orderly growth. ICAO regularly amends the content of the 18 annexes that contain standards and recommended practices supporting the Convention, and routinely discusses and develops rules for several areas, including personnel licensing, aircraft operation, airworthiness, air navigation, and border-crossing procedures for international civil aviation.

ICAO defines a *standard* as any specification necessary for the safety or regularity of international air navigation and to which members will conform in accordance with the Convention. In other words, a standard is mandatory. ICAO defines a *recommended practice* as any specification that is considered desirable in the best interests of international air navigation and to which contracting States will do their best to conform. A recommended practice is “highly encouraged,” but still voluntary in nature.

Here’s an example of how ICAO standards and recommended practices affect the United States. As you know, the FAA recently changed its terminology for directing an operator to “taxi into position and hold” (TIPH). This common ATC command wasn’t as easy for visiting international aviators to understand, and therefore introduced unnecessary risk. Thus the new instruction, “line up and wait,” or LUAW, was voted upon

via the ICAO forum, and the verbiage was changed. The FAA followed suit, as did every other member nation where this terminology was not already used.

ICAO does have a process regarding differences between the ICAO standards and the national legislation/regulations of each State. Under Article 38 of the Convention, a State can file a “difference.” The recognition of differences is done at the country-to-country level, however in some cases, a U.S. difference to a standard won’t be recognized by other States.

In addition to establishing regulations, ICAO defines the protocols for air accident investigations on a global level. This may not seem like such a big deal for U.S. owned and operated aircraft on U.S. soil, but should an accident occur in Germany involving an American-contracted aircraft flown by an American pilot with Dutch, Brazilian, and South African passengers on board ... well, you get the idea that establishing jurisdiction can be tricky.

## **WHERE (are they located?)**

ICAO headquarters is located in the city of Montréal, in Quebec, Canada. In addition, there are several extensions of ICAO (similar to the FAA’s Flight Standards District Offices, or FSDOs), breaking the world up into seven regions. Some regions that might interest you are the European and North Atlantic (EUR/NAT) region, whose office is located in Paris, France, and the North American, Central American, and Caribbean (NACC) region, which is located in Mexico City, Mexico.

## **WHY (should you care, anyway?)**

In today’s global aviation construct, an airplane takes off or lands every few seconds somewhere on the face of the Earth. That is 24 hours a day, 365 days of the year, and general aviation is a big chunk of that. In order to take your beautiful Cessna 172 up to Ottawa for a little pike fishing, you have to be ICAO-compliant. Period. Otherwise you could be “stopped at the border,” so to speak, and prohibited from entering international airspace. Or worse, you could get to where you want to go and then find yourself stuck on that end and restricted

from flying back!

In some cases, the issue may have to do with results of the physical inspection of your aircraft. Other civil aviation authorities can perform a ramp inspection on you and your aircraft, private, corporate, or commercial, under Article 16 of the Convention. The main purpose of such inspections is to determine your compliance with the applicable international safety standards while you are operating in their sovereign airspace. Also, as a part of your flight preparation, you need to be aware of the differences filed by the United States and the State to which you are going. These are available at various locations, including the back of each respective Annex document and the Aeronautical Information Publication (AIP) of each State.

ICAO establishes the standards by which all civil aviation authorities measure and make concessions for one another. Other States have a right to expect your compliance. In the United States, we follow the regulations provided to us by the FAA, but the fact of the matter is that these standards don't mean much when you want to fly to or around Nassau, Bahamas. Nor do Bahamian regulations have jurisdiction here in the United States. That country has to have buy-in when it comes to what standards they might allow. They do this through ICAO. *We* do this through ICAO.

As I understand it, the FBO in Northern Illinois is still there under the management of the same family. It is doing well, having grown into a much larger operation with an attached airpark. In addition to domestic GA, they have also acquired an executive jet charter operation that has the capability to conduct both domestic and international operations. While that old Cherokee Six may be long gone, the new blood in the terminal and the new iron on the ramp still have obligations to ensure that proper international civil aviation operational requirements are met.

## **Eighteen Annexes of ICAO**

Several of the 18 Annexes have materials regarding international operations of GA aircraft, be they private or corporate and cover a wide assortment of topics. Annex 1 deals with personnel licensing. Annex 2 is rules of the air. Annex 6-Part II is for GA airplanes and Part III is for helicopters. And Annex 8 relates to continued aircraft



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airworthiness. More information can be found at the ICAO website under documents, or at [www.icao.int/Documents/annexes\\_booklet.pdf](http://www.icao.int/Documents/annexes_booklet.pdf).

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The Annexes of ICAO presently in use are:

1. Personnel Licensing
2. Rules of the Air
3. Meteorological Service for International Air Navigation
4. Aeronautical Charts
5. Units of Measurement to be used in Air and Ground Operations
6. Operation of Aircraft
7. Aircraft Nationality and Registration Marks
8. Airworthiness of Aircraft
9. Facilitation
10. Aeronautical Telecommunications
11. Air Traffic Services
12. Search and Rescue
13. Aircraft Accident and Incident Investigation
14. Aerodromes
15. Aeronautical Information Services
16. Environmental Protection
17. Security: Safeguarding International Civil Aviation against Acts of Unlawful Interference
18. The Safe Transport of Dangerous Goods by Air ✈

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