Introduction to the AFS

MIDAMC Workshop

5-7 April 2026

Chicago Convention

- The Convention on International Civil Aviation, also known as the Chicago Convention, established the International Civil Aviation Organization (ICAO).

- The document was signed on December 7, 1944 in Chicago, by 52 signatory states.

ICAO

- ICAO was established on December 7, 1944
- The Convention is supported by Nineteen annexes containing standards and recommended practices (SARPs).
- The Convention has been revised several times

Annexes

Annex 1	Personal Licensing
Annex 2	Rules of the AIR
Annex 3	Meteorological service for the International Air navigation
Annex 4	Aeronautical Charts
Annex 5	Units of Measurement to be used in Air & Ground OPS.
Annex 6	Operation of Aircraft
Annex 7	Aircraft Nationality and Registration Marks
Annex 8	Airworthiness of Aircraft
Annex 9	Facilitation

Annexes

Annex 10	Aeronautical Telecommunications
Annex 11	Air Traffic Services
Annex 12	Search and Rescue
Annex 13	Aircraft Accident and Incident Investigation
Annex 14	Aerodromes
Annex 15	Aeronautical Information Service
Annex 16	Environmental Protection
Annex 17	Security
Annex 18	The Safe Transport of Dangerous Goods by Air
Annex 19	SMS

Annex 10

Volume I — Radio Navigation Aids

Volume II — Communications Procedures including those with PANS status

Volume III — Communication Systems

- **Part 1 — Digital Data Communication Systems**
- **Part 2 — Voice Communication Systems**

Volume IV — Surveillance Radar and Collision Avoidance Systems

Volume V — Aeronautical Radio Frequency Spectrum Utilization

AFS

The Aeronautical Fixed Service provides, among other things, for the exchange of messages pertaining to the safety of air navigation and the regular, efficient and economical operation of air navigation service

AFS

1. *AFTN:*
   conveyance of text messages in ITA-2 or IA-5 format.

2. *CIDIN:*
   Common ICAO Data Interchange Network, which is based on packet switching techniques.

3. *AMHS:*
   ATS MESSAGE HANDLING SYSTEM

AFTN Design

- The Aeronautical fixed service is defined in Annex 10 as “A telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services”.

- The AFTN, is defined as “ a worldwide system of aeronautical fixed service, for the exchange of messages between Aeronautical fixed stations having the same or compatible communication characteristics”.

AFTN Circuit

- Three conditions should be satisfied before a circuit regarded as AFTN circuit:

1- It must be **integrated**, provision must exist for the relay of messages between the circuit concerned and other circuits of the network.

2- messages must be **prepared and handled according to procedures prescribed in Annex 10**; and

3- The **ultimate responsibility** for the circuit's operation must have been assumed by the **state** concerned.

ICAO Policy on AFTN Planning

- Main AFTN COM Center
- Tributary AFTN COM center
- AFTN Station
- Main Trunk Circuit
- Tributary Circuit
- Entry/Exit Points

ICAO DOC for AMHS

1. ICAO Annex 10, Vol. III

   Digital communication systems

2. ICAO Doc 9880:

   Manual on detailed technical specification for the aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocol

ICAO DOC for AMHS

3. ICAO Doc 9896:

Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol suite (IPS) Standards and Protocols.

AFTN Limitation

1- Limited message length (Text 1800 characters. Message 2100)

2- Limited number of addressees (max 21 addressee)

3- No delivery reports

4- restricted character set can be used (Upper case, no special character, ..etc) similar to old teleprinter

AMHS Benefits

Store and Forward Messaging service.
Based on X.400 standard
Compared to the service of the AFTN, the Basic AMHS offers some significant improvements such as:

1- practically unlimited message length
2- virtually no limit on the number of addressees of a message
3- provision of non-delivery reports
4 -Indication of the subject of a message

AMHS Benefits

There are several advantages of AMHS over AFTN/CIDIN including:

- increased speed, capacity and throughput
- enhanced reliability
- extended functionality
- interoperability with other global messaging services
- security capabilities
- use of COTS equipment and services

AMHS can support other applications