



# AIR TRAFFIC SERVICES

## 1. Introduction

As for any other form of transportation, there is an inherent need to provide certain services to air traffic so that it can be conducted in a safe and orderly manner.

Air Traffic Service (ATS) can form the basis for establishing the day-to-day requirement of the service provided to aircraft.

The term “ATS” has been defined as being a generic term meaning various flight information service, alerting service, air traffic advisory service, air traffic control service, area control service, approach control service or aerodrome control service.

### 1.1. National responsibility

The planning for and the execution of air traffic services (ATS) is essentially a national responsibility unless agreements have been made amongst states to conduct ATS as a joint effort for a defined area covering more than one state or for areas where no sovereign rights are exercised (ex: high sea).

In IVAO, the execution of air traffic services is delegated to divisions (national responsibility). Some agreements are possible and may be coordinated by IVAO HQ or several divisions to establish multidivisional airspace or specific agreement.

Furthermore, a close interrelationship between national services of adjacent states is necessary

### 1.2. Special operation services

In many states, the military services constitute a rather important part of the airspace users. In some states, military authorities have therefore established their own ATS in parallel with the civil ATS system in order to provide for their specialized operations (ex: fighter training, interceptions, low-level missions, special air exercises...).

In IVAO, the military services are part of special operations department (HQ and/or Division) and can be activated when a specific event is planned.

During, these specific operations, the co-existence of a civil as well as military ATS must not result in competition and inefficient use of the airspace.

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## 2. Objectives

The objectives of the air traffic services shall be to:

- Prevent collisions between aircraft
- Prevent collisions between aircraft in the manoeuvring area and obstructions in that area
- Expedite and maintain an orderly flow of air traffic
- Provide advice and information useful for the safe and efficient conduct of flights
- Notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organizations as required.

### 2.1. Division of ATS

In order to accomplish the previous objectives, the air traffic services are sub-divided into three services:

1. Air traffic control service will accomplish the objectives of preventing all collisions between aircraft and expediting and maintaining an orderly flow of air traffic
2. Flight information service will accomplish the objectives of providing advice and information useful for the safe and efficient conduct of flights
3. Alerting service will accomplish the objectives of notifying appropriate organizations regarding aircraft in need of search and rescue.

### 2.2. Air traffic service requirement

All air traffic services units shall be supplied with up-to-date information on existing and forecast meteorological conditions as necessary for the performance of their respective functions.

A controlled flight shall be under the control of **only one air traffic control unit at any given time.**

In IVAO, each ATC can have weather information using IvAc software (METAR).

Units providing area control service shall be supplied with:

- SIGMET and AIRMET information, special air-reports, current meteorological reports and forecasts, particular emphasis being given to the occurrence or expected occurrence of weather deterioration
- Current pressure data for setting altimeters, for locations specified by the flight information centre or area control centre concerned

Units providing approach control service shall be supplied with:

- Current meteorological reports and forecasts for the airspace and the aerodromes under their responsibility
- Current pressure data for setting altimeters, for locations specified by the unit providing approach control service.
- Current surface wind
- Runway visual range measurement (RVR)

Units providing tower control service shall be supplied with:

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- Current meteorological reports and forecasts for the airspace and the aerodromes under their responsibility
- Current pressure data for setting altimeters, for the location concerned
- Current surface wind
- Runway visual range measurement (RVR)
- Operationally significant conditions of the movement area, including the existence of temporary hazards, and the operational status of any associated facilities at the aerodrome

### 3. Air control service - ATS

#### 3.1. Application

Air traffic control service or ATS shall be provided:

- to all IFR flights in airspace classes A, B, C, D and E
- to all VFR flights in airspace classes B, C and D
- to all special VFR flights
- to all aerodrome traffic at controlled aerodromes

#### 3.2. Operation

In order to provide air traffic control service, an air traffic control unit shall:

- Be provided with information on the intended movement of each aircraft, or variations thereof, and with current information on the actual progress of each aircraft;
- determine from the information received, the relative positions of known aircraft to each other;
- Issue clearances and information for the purpose of preventing collision between aircraft under its control and of expediting and maintaining an orderly flow of traffic;
- Coordinate clearances as necessary with other units whenever an aircraft might otherwise conflict with traffic operated under the control of such other units or before transferring control of an aircraft to such other units.

Information on aircraft movements shall enable an analysis in order to maintain an efficient flow of air traffic with adequate separation between aircraft.

Clearances issued by air traffic control units shall provide separation:

- between all flights in airspace Classes A and B;
- between IFR flights in airspace Classes C, D and E;
- between IFR flights and VFR flights in airspace Class C;
- between IFR flights and special VFR flights;
- between special VFR flights when so prescribed by national ATS regulations.

When requested by an aircraft, in airspace Classes D and E, a flight may be cleared without separation with respect to a specific portion of the flight conducted in visual meteorological conditions when the national regulation permits such flights.

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Separation by an air traffic control unit is obtained by at least one of the following:

- vertical separation, obtained by assigning different levels
- horizontal separation, obtained by providing longitudinal separation, by maintaining an interval between aircraft operating along the same, converging or reciprocal tracks, or lateral separation, by maintaining aircraft on different routes or in different geographical areas
- composite separation, consisting of a combination of vertical separation and horizontal separation

### 3.3. Air traffic control service sub-type

The air traffic control (ATC) service is divided in three sub-parts as follows:

1. **Area control service (ACC):** the provision of air traffic control service for en-route controlled flights except the aircraft associated with arrival or departure routes or ground movements.
2. **Approach control service (APP):** the provision of air traffic control service for controlled flights associated with arrival or departure except the aircraft associated with ground movements.
3. **Aerodrome control service (TWR):** the provision of air traffic control service for aerodrome traffic at and in the vicinity of an aerodrome

#### 3.3.1. Area control service (ACC)

**The area control service shall be provided by the area control centre (ACC)** or, where no area control centre is established, by the unit providing approach control service in a control area of limited extent. This air traffic control service is provided for en-route controlled flights except the aircraft associated with arrival or departure routes or ground movements.

Coordination plays an essential part in the provision of area control service and the efficiency of operation of an ACC can be significantly affected by it.

The coordination aspects can be split in several types:

- Coordination with adjacent ACC
- Coordination with associated ATC units providing services within the same FIR
- Coordination within the ACC concerned

In IVAO, area control centres are taken by \_CTR positions. The FSS (Flight Service Station) position shall not give any area control services.

#### 3.3.2. Approach control service (APP)

**The approach control service shall be provided by an approach control unit** when it is necessary or desirable to establish a separate unit or, by an aerodrome control tower or area control centre when it is necessary to combine the functions of the approach control service under the responsibility of one unit . This air traffic control service is provided for controlled flights associated with arrival or departure except the aircraft associated with ground movements

Measures should be taken to ensure the possible mix of instrument flight rules (IFR) and visual flight rules (VFR) operations in order not to impair the safety of flight operations.

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The co-operative arrangements between approach controller and aerodrome control tower(s) should be based on considerations of an operational nature only so as to ensure the optimum flow of air traffic.

It has been found that at some busy major aerodromes, the arrangement, whereby departing traffic is transferred directly from aerodrome control tower to a departure only control position, has contributed to an optimum flow of considerable amounts of air traffic while keeping the workload within manageable proportions. This arrangement depends specifically on the local situation and it should only be applied after careful consideration of all relevant factors by all parties concerned.

The internal arrangement for sharing the task of providing approach control service is possible using a basic split between those controlling arriving and those controlling departing traffic is the most suitable arrangement, unless other arrangements have been made whereby departing air traffic is directly transferred from the aerodrome control tower to the associated en-route controller.

Operational consideration shall be based on the safe and efficient flow of air traffic before any other consideration.

In IVAO, approach control units are taken mainly by \_APP positions and also partially by \_DEP positions which take only the departure traffic.

### 3.3.3. Aerodrome control service (TWR)

**The Aerodrome control service shall be provided by an aerodrome control tower.**

This air traffic control service is provided for aerodrome traffic at and in the vicinity of an aerodrome.

The internal arrangement for sharing the task of providing aerodrome control service is possible where more than one controller is present:

- Runway management, ground management and Clearance management can be split over several ATC control positions
- Independent parallel runway management can be split over several ATC control positions
- Large ground or separate Civil/Military apron and taxiway can be split over several ATC control positions

In IVAO, this split is possible using DEL, GND, and TWR positions as IFR clearance delivery, ground management, runway management.

### 3.3.4. Division of responsibility

The division of responsibilities between TWR and APP and between APP and ACC cannot be rigidly defined because the responsibilities depend very much on local conditions which vary from location to location:

- Remember that this possibility of extended control which is permitted by the regulation is subject to your national regulation authorization.

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- Remember that controlling outside your responsibility area is forbidden in IVAO except when national regulation permits it, or when it is published clearly on charts.

It should be noted that, depending on traffic conditions, the provision of certain parts of ATC service may be restricted to those times or periods when the service in question is actually required.

But, this shall, under no circumstances, result in a decrease of flight safety.

In IVAO, the provision of several sub-types of ATC service may be cumulated under the same air traffic controller. (Example: CTR can control APP and TWR).

### 3.4. Air traffic control clearances

An air traffic control clearance shall indicate:

- aircraft identification as shown in the flight plan
- clearance limit
- route of flight
- level(s) of flight for the entire route or part thereof and changes of levels if required
- any necessary instructions or information on other matters such as approach or departure manoeuvres, communications and the time of expiry of the clearance

Standard departure and arrival routes and associated procedures should be established to facilitate:

- the safe, orderly and expeditious flow of air traffic
- the description of the route and procedure in air traffic control clearances

The flight crew shall read back to the air traffic controller safety-related parts of ATC clearances and instructions which are transmitted by voice.

The following items shall always be read back:

- ATC route clearances;
- clearances and instructions to enter, land on, take off on, hold short of, cross and backtrack on any runway
- runway-in-use
- altimeter settings
- SSR codes
- level instructions
- heading and speed instructions
- transition levels

Other clearances or instructions, including conditional clearances, shall be read back or acknowledged in a manner to clearly indicate that they have been understood and will be complied with.

The controller shall listen to the read-back to ascertain that the clearance or instruction has been correctly acknowledged by the flight crew and shall take immediate action to correct any discrepancies revealed by the read-back.

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An **air traffic control clearance shall be coordinated between air traffic control units to cover the entire route** of an aircraft.

An aircraft shall be cleared for the entire route to the aerodrome of first intended landing:

- when it has been possible, prior to departure, to coordinate the clearance between all the units under whose control the aircraft will come
- when there is reasonable assurance that prior coordination will be effected between those units under whose control the aircraft will subsequently come

When coordination has not been achieved or is not anticipated, **the aircraft shall be cleared only to that point where coordination is reasonably assured**. Prior to reaching such point, or at such point, **the aircraft shall receive further clearance or holding instructions**

Air traffic flow management (ATFM) shall be implemented for airspace where air traffic demand at times exceeds, or is expected to exceed, the declared capacity of the air traffic control services concerned.

The movement of persons or vehicles including towed aircraft in the manoeuvring area of an aerodrome shall be controlled by the aerodrome control tower as necessary to avoid hazard to them or to aircraft landing, taxiing or taking off.

Note that only follow-me cars can be simulated in IVAO.

### 3.5. Provision of radar

Radar systems should provide for the display of safety-related alerts and warnings, including conflict alert, conflict prediction, minimum safe altitude warning and unintentionally duplicated SSR codes.

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## 4. Flight information Service (FIS)

Flight information service will accomplish the objectives of providing advice and information useful for the safe and efficient conduct of flights.

Flight information service shall be provided to all aircraft which are likely to be affected by the information.

Flight information service does not relieve the pilot-in-command of an aircraft of any responsibilities and the pilot-in-command has to make the final decision regarding any suggested alteration of flight plan.

The provision of air traffic control service shall have precedence over the provision of flight information service whenever the provisions of air traffic control service so requires.

### 4.1. Scope

Flight information service provided to flights shall include the provision of information concerning:

- weather conditions reported or forecast at departure, destination and alternate aerodromes
- collision hazards to aircraft operating in airspace classes C, D, E, F and G
- status on navigation aids
- exercises in progress and airspace reservation (Restricted zone)
- any available information of surface sea vessels in the area for flight over water areas when requested by a pilot (not simulated by IVAO except in some specific scenery)

The information of which may constitute a collision hazard to the aircraft informed, will sometimes be incomplete and air traffic services cannot assume responsibility for its issuance at all times or for its accuracy.

In addition to previous items, flight information service shall include the provision of pertinent:

- SIGMET and AIRMET information
- information concerning volcanic eruptions and volcanic ash clouds (not simulated in IVAO)
- information concerning the release into the atmosphere of toxic chemicals (not simulated in IVAO)
- information on the serviceability of navigation aids
- information on changes in condition of aerodromes and associated facilities, including information on the state of the aerodrome movement areas
- any other information likely to affect safety

Flight information service provided to VFR flights shall include the provision of available information concerning traffic and weather conditions along the route of flight that are likely to make operation under the visual flight rules impracticable.

Where flight information service is the only service provided for en-route traffic, it is generally provided to aircraft by a flight information centre (FIC).

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## 4.2. Aerodrome flight information service (AFIS)

Where flight information service is the only service provided to aircraft at and in the vicinity of a given aerodrome, it is generally provided to aircraft by aerodrome flight information service (AFIS).

## 4.3. ATIS - automatic terminal information service

The meteorological information and operational information concerning navigation aids and aerodromes included in the flight information service shall, whenever available, be provided in an operationally integrated form.

Operational flight information service broadcasts, when provided, should consist of messages containing integrated information regarding selected operational and meteorological elements appropriate to the various phases of flight. These broadcasts should be of three major types, i.e. HF, VHF and ATIS.

In IVAO, the automatic terminal information service named ATIS is the main flight information broadcast.

When ATIS is provided:

- the information communicated shall relate to a single aerodrome (see note below)
- the information communicated shall be updated immediately when a significant change occurs
- the preparation and dissemination of the ATIS message shall be the responsibility of the air traffic services
- individual ATIS messages shall be identified by a designator in the form of a letter of the ICAO spelling alphabet. Designators assigned to consecutive ATIS messages shall be in alphabetical order
- aircraft shall acknowledge receipt of the information upon establishing communication with the ATS unit
- the appropriate ATS unit shall, in the case of arriving aircraft, provide the aircraft with the current altimeter setting when needed
- the meteorological information shall be extracted from the local meteorological report.

**Note:** Since an approach controller has a separate ATIS in IVAO, ATIS can broadcast information related to several aerodromes.

Information contained in a current ATIS, the receipt of which has been acknowledged by the aircraft concerned, needs not be included in a directed transmission to the aircraft, with the exception of the altimeter setting.

If an aircraft acknowledges receipt of an ATIS that is no longer current, any element of information that needs updating shall be transmitted to the aircraft without delay.

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## 5. Alerting service

Alerting service will accomplish the objectives of notifying appropriate organizations regarding aircraft in need of search and rescue aid

Alerting service shall be provided:

- to all aircraft provided with air traffic control service
- in so far as practicable, to all other aircraft having filed a flight plan or otherwise known to the air traffic services
- to any aircraft known or believed to be the subject of unlawful interference

The alerting service is not implemented in IVAO.  
Only a small description of the important points is presented in this documentation.

In IVAO, air traffic controllers shall take charge of all aircraft in emergency state and provide information to all neighbouring controllers concerned with this emergency.

### 5.1. Application

Flight information centres or area control centres shall serve as the central point for collecting all information relevant to the state of emergency of an aircraft operating within the area concerned and for forwarding such information to the appropriate rescue coordination centre.

In the event of a state of emergency arising from an aircraft while it is under the control of an aerodrome control tower or approach control unit, such unit shall notify immediately the flight information centre or area control centre responsible which shall in turn notify the rescue coordination centre, except that notification of the area control centre, flight information centre, or rescue coordination centre shall not be required when the nature of the emergency is such that the notification would be superfluous.

The aerodrome control tower or approach control unit responsible shall first alert and take other necessary steps to set in motion all appropriate local rescue and emergency organizations which can give the immediate assistance required.

### 5.2. Notification of rescue phases

#### Uncertainty phase when

- no communication has been received from an aircraft within a period of thirty minutes after the time a communication should have been received, or from the time an unsuccessful attempt to establish communication with such aircraft was first made, whichever is the earlier
- an aircraft fails to arrive within thirty minutes of the estimated time of arrival last notified to or estimated by air traffic services units, whichever is the later

Except when no doubt exists as to the safety of the aircraft and its occupants

#### Alert phase when

- following the uncertainty phase, subsequent attempts to establish communication with the aircraft or inquiries to other relevant sources have failed to reveal any news of the aircraft

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- an aircraft has been cleared to land and fails to land within five minutes of the estimated time of landing and communication has not been re-established with the aircraft
- information has been received which indicates that the operating efficiency of the aircraft has been impaired, but not to the extent that a forced landing is likely, except when evidence exists that would allay apprehension as to the safety of the aircraft and its occupants
- An aircraft is known or believed to be the subject of unlawful interference.

**Distress phase when:**

- following the alert phase, further unsuccessful attempts to establish communication with the aircraft and more widespread unsuccessful inquiries point to the probability that the aircraft is in distress
- the fuel on board is considered to be exhausted, or to be insufficient to enable the aircraft to reach safety,
- information is received which indicates that the operating efficiency of the aircraft has been impaired to the extent that a forced landing is likely
- information is received or it is reasonably certain that the aircraft is about to make or has made a forced landing

Except when there is reasonable certainty that the aircraft and its occupants are not threatened by grave and imminent danger and do not require immediate assistance

**The notification shall contain as much of the following information as is available in the order listed:**

- INCERFA, ALERFA or DETRESFA, as appropriate to the phase of the emergency;
- agency and person calling;
- nature of the emergency;
- significant information from the flight plan;
- unit which made last contact, time and means used;
- last position report and how determined;
- colour and distinctive marks of aircraft;
- dangerous goods carried as cargo;
- any action taken by reporting office; and
- other pertinent remarks

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