INTRODUCTION

This Air Traffic Control Section is designed to provide pilots with International Civil Aviation Organization (ICAO) Standards, Recommended Practices and Procedures for international operations. In addition, on a state-by-state basis, flight procedures unique to each state, or different from the published ICAO rules and procedures, are included.

Each part of this Air Traffic Control Section is described below.

ICAO DEFINITIONS

These definitions are applicable to the ICAO information contained in this ATC section and have been extracted from appropriate ICAO publications.

FLIGHT PROCEDURES

Details of the PANS-OPS instrument departure and approach procedure information useful to the pilot-in-command in the execution of an instrument departure or approach procedure are included. The information is extracted from the latest amended edition of Procedures for Air Navigation Services — Aircraft Operations, Document 8168, Volume I, Flight Procedures. References to earlier editions are included.

ICAO RULES OF THE AIR—ANNEX 2 and ICAO ATS AIRSPACE CLASSIFICATIONS—ANNEX 11

ICAO Rules of the Air consist of an extraction of ICAO Annex 2. ICAO ATS Airspace Classifications contain definitions and requirements for airspace classifications.

ICAO RULES OF THE AIR AND AIR TRAFFIC SERVICES, PANS-RAC (DOC 4444)

These pages contain those extracts of the PANS-RAC Document 4444 which ICAO has specifically identified as being of particular interest to pilots-in-command.

MACH NUMBER TECHNIQUE

These pages contain the objectives, prerequisites and general procedures for Mach Number Technique as laid out in ICAO DOC 9426.

STATE PAGES RULES AND PROCEDURES

These pages contain flight information applicable to the specific state. They are compiled by Jeppesen using the state's Aeronautical Information Publication (AIP) as primary source material.

The state name is shown with the page number, such as Australia-1, Bulgaria-1, etc. Information is presented as follows:

GENERAL

A general statement concerning conformance, or non-conformance with ICAO procedures and units of measurement used by the state are provided.

FLIGHT PROCEDURES

HOLDING

Holding speed tables are provided in the Flight Procedures ICAO pages. Reference to the specific, applicable table is included on the state rules and procedures page. If the state has exceptions to the published holding tables, a complete tabulation of holding speeds is provided.

PROCEDURE LIMITATIONS AND OPTIONS

Statements concerning conformance with ICAO PANS-OPS are included here. The latest version of PANS-OPS, Volume I is provided in the ICAO Flight Procedures chapter. The statement "Instrument Procedures are in conformance with the new PANS-OPS Document 8168, Volume II" indicates compliance with this document.

Procedure limitations, non-standard circling protected area, airspeed restrictions, and similar type information is included. Significant state differences with ICAO PANS-OPS Instrument Departure Procedures are also published under this heading.

AIRPORT OPERATING MINIMUMS

The type landing, take-off and alternate minimums published by the state are detailed. If the state publishes Obstruction Clearance Altitude/Height (OCA/H), or the earlier PANS-OPS Obstruction Clearance Limit (OCL) information, the information is noted. Approach ban information is also included.

PILOT CONTROLLED LIGHTING (PCL)

The pilot operating procedures are included for those States utilizing a standard PCL system.

NOISE ABATEMENT PROCEDURES

Standard procedures, unique to all airports within a state and not published elsewhere by Jeppesen, are listed here.

ATS AIRSPACE CLASSIFICATION

New standard airspace classifications were designated by ICAO applicable 14 November 1991. The new classifications are explained in ICAO ATS Airspace Classifications Annex 11. Statements under the heading ATS AIRSPACE CLASSIFICATIONS indicate that the state has implemented the ICAO classifications, include any state exceptions, or note that the state has not implemented the change, and provide a brief description of the system still in effect.

SPECIAL REQUIREMENTS AND REGULATIONS

Special restrictions to filing flight plans, night operations, special reporting procedures, use of non-standard altimeter setting procedures, etc., are listed under this heading.

DIFFERENCES FROM ICAO STANDARDS AND PROCEDURES

Information published is limited to significant state differences with ICAO Definitions, ICAO Annex 2, Rules of the Air, and PANS-RAC, Document 4444, referenced to specific paragraph numbers.

INTERNATIONAL CIVIL AVIATION ORGANIZATION -- DEFINITIONS

Definitions in this listing are extracted from the following ICAO documents:

ICAO RULES OF THE AIR, ANNEX 2

RULES OF THE AIR AND AIR TRAFFIC SERVICES, PANS-RAC (Doc 4444)

FLIGHT PROCEDURES, PROCEDURES FOR AIR NAVIGATION SERVICES — AIRCRAFT OPERATIONS, PANS-OPS (Doc 8168)

DEFINITIONS

ACROBATIC FLIGHT — Manoeuvres intentionally performed by an aircraft involving an abrupt change in its attitude, an abnormal attitude, or an abnormal variation in speed.

ADS AGREEMENT — An ADS reporting plan which establishes the conditions of ADS data reporting (i.e., data required by the air traffic services unit and frequency of ADS reports which have to be agreed to prior to the provision of the ADS services).

NOTE: The terms of the agreement will be exchanged between the ground system and the aircraft by means of a contract, or a series of contracts.

ADS CONTRACT — A means by which the terms of an ADS agreement will be exchanged between the ground system and the aircraft, specifying under what conditions ADS reports would be initiated, and what data would be contained in the reports.

NOTE: The term "ADS contract" is a generic term meaning variously, ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode. Ground forwarding of ADS reports may be implemented between ground systems.

ADVISORY AIRSPACE — An airspace of defined dimensions, or designated route, within which air traffic advisory service is available.

ADVISORY ROUTE — A designated route along which air traffic advisory service is available.

NOTE: Air traffic control service provides a much more complete service than air traffic advisory service; advisory areas and routes are therefore not established within controlled airspace, but air traffic advisory service may be provided below and above control areas.

AERODROME — A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

NOTE: The term "aerodrome" where used in the provisions relating to flight plans and ATS messages is intended to cover also sites other than aerodromes which may be used by certain types of aircraft; e.g., helicopters or balloons.

AERODROME CONTROL SERVICE — Air traffic control service for aerodrome traffic.

AERODROME CONTROL TOWER — A unit established to provide air traffic control service to aerodrome traffic.

AERODROME ELEVATION — The elevation of the highest point of the landing area.

AERODROME TRAFFIC — All traffic on the manoeuvring area of an aerodrome and all aircraft flying in the vicinity of an aerodrome.

NOTE: An aircraft is in the vicinity of an aerodrome when it is in, entering or leaving an aerodrome traffic circuit.

AERODROME TRAFFIC CIRCUIT — The specified path to be flown by aircraft operating in the vicinity of an aerodrome.

AERODROME TRAFFIC ZONE — An airspace of defined dimensions established around an aerodrome for the protection of aerodrome traffic.

AERONAUTICAL FIXED SERVICE (AFS) — 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.

AERONAUTICAL FIXED STATION — A station in the aeronautical fixed service.

AERONAUTICAL GROUND LIGHT — Any light specially provided as an aid to air navigation, other than a light displayed on an aircraft.

AERONAUTICAL INFORMATION PUBLICATION (AIP) — A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

AERONAUTICAL MOBILE SERVICE — A mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radio beacon stations may also participate in this service on designated distress and emergency frequencies.

AERONAUTICAL STATION — A land station in the aeronautical mobile service. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea.

AERONAUTICAL TELECOMMUNICATION SERVICE — A telecommunication service provided for any aeronautical purpose.

AERONAUTICAL TELECOMMUNICATION STATION — A station in the aeronautical telecommunication service.

AEROPLANE — A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

AIRBORNE COLLISION AVOIDANCE SYSTEM (ACAS) — An aircraft system based on secondary surveillance radar (SSR) transponder signals which operates independently of ground-based equipment to provide advice to the pilot on potential conflicting aircraft that are equipped with SSR transponders.

AIRCRAFT — Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

AIRCRAFT ADDRESS — A unique combination of 24 bits available for assignment to an aircraft for the purpose of air-ground communications, navigation and surveillance.

FLIGHT PROCEDURES (DOC 8168)

Extracted from ICAO Document 8168, Volume I - Fourth Edition — Flight Procedures, PROCEDURES FOR AIR NAVIGATION SERVICES — AIRCRAFT OPERATIONS, herein known as PANS-OPS.

1 GENERAL

1.1 This section describes operational procedures and outlines the parameters on which the criteria of ICAO Document 8168, Volume II – *Construction of Visual and Instrument Flight Procedures,* are based, so as to illustrate the need for pilots to adhere strictly to the published procedures.

1.1.1 With the exception of this introductory material, paragraphs have been extracted in whole or in part from PANS-OPS. The PANS-OPS paragraph numbers are used beginning with Part II.

1.2 PANS-OPS VERSUS PREVIOUS EDITIONS TO PANS-OPS

1.2.1 Instrument Departure and Approach Procedures

1.2.1.1 There are instrument departure and approach procedures published that were developed prior to the ICAO procedures initially established with ICAO Document 8168, Volume I, First and Second Editions. These procedures may have applied different procedure criteria.

1.2.1.2 Procedures developed in accordance with the ICAO Procedures are indicated with a margin notation “PANS-OPS”, “PANS-OPS 3” or “PANS-OPS 4”.

PANS-OPS — indicates that the State has specified that the approach procedure complies with ICAO Document 8168, Volume II, First or Second Edition.

PANS-OPS 3 — further indicates that holding speeds to be used are those specified in ICAO Document 8168, Volume II, Third Edition.

NOTE: For applying the correct holding speed, refer to the respective State RULES AND PROCEDURES page.

PANS-OPS 4 — further indicates that the acceleration segment criteria have been deleted, as formerly published in ICAO Document 8168, Volume II, First, Second and Third Editions.

NOTE: Acceleration Segment criteria published in previous editions of Document 8168 are contained in Appendix 1.

1.2.2 Obstacle Clearance Limit — OCL

1.2.2.1 A few approach charts which still show an OCL in the profile section have not been converted to the PANS-OPS standard. The airspace protected for the IAP is smaller, and normally the speed is restricted to a maximum 150 KTAS with an omnidirectional wind of 60 kt.

1.3 STATE PAGES — RULES AND PROCEDURES

1.3.1 On RULES AND PROCEDURES pages, the conversion status of the IAPs applicable for the individual States is explained under the subtitle “Flight Procedures”.

FLIGHT PROCEDURES (DOC 8168) PART III. APPROACH PROCEDURES

Only a few instrument approach procedures (IAPs) are left which are constructed in accordance with the standards in an earlier version of PANS-OPS. This means IAPs are constructed on a basic criteria which includes tangible values as follows:

- **maximum TAS 150 kt;**
- **omnidirectional wind speed up to 60 kt.**

1 GENERAL CRITERIA

1.2 THE INSTRUMENT APPROACH PROCEDURE

1.2.1 The design of an instrument approach procedure is, in general, dictated by the terrain surrounding the aerodrome, the type of operations contemplated and the aircraft to be accommodated. Theses factors in turn influence the type and siting of navigation aids in relation to the runway or aerodrome. Airspace restrictions may also affect the siting of navigation aids.

1.2.2 An instrument approach procedure may have five separate segments. They are the arrival, initial, intermediate, final and missed approach segments. The approach segments begin and end at designated fixes. However, under some circumstances certain of the segments may begin at specified points where no fixes are available; e.g., the final approach segment of a precision approach may originate at the point of intersection of the designated intermediate flight altitude with the nominal glide path.

1.2.3 Whenever possible, a straight-in approach will be specified which is aligned with the runway centerline. In the case of non-precision approaches, a straight-in approach is considered acceptable if the angle between the final approach track and the runway centerline is 30° or less.

1.2.4 In those cases where terrain or other constraints cause the final approach track alignment or descent gradient to fall outside the criteria for a straight-in approach, a circling approach will be specified. The final approach track of a circling approach procedure is in most cases aligned to pass over some portion of the usable landing surface of the aerodrome.

1.2.5 ***Minimum sector altitudes/terminal arrival altitudes.*** Minimum sector altitudes or terminal arrival altitudes are established for each aerodrome and provide at least 300 m (984 ft) obstacle clearance within 46 km (25 NM) of the navigation aid, initial approach fix or intermediate fix associated with the approach procedure for that aerodrome.

1.6 FACTORS AFFECTING OPERATIONAL MINIMA

1.6.1 In general, minima are developed by adding the effect of a number of operational factors to OCA/H to produce, in the case of precision approaches, decision altitude (DA) or decision height (DH) and, in the case of non-precision approaches, minimum descent altitude (MDA) or minimum descent height (MDH). The general operational factors to be considered are specified in Annex 6.

1.6.2 Operators may specify two types of approach procedures for non-precision approaches. The first is that described as: "descend immediately to not below the minimum stepdown fix altitude/height or MDA/H as appropriate". This method is acceptable as long as the achieved descent gradient remains below 15 per cent and the missed approach is initiated at or before the MAP. Alternatively, operators are encouraged to use a stabilized approach technique for non-precision approaches. This technique requires a continuous descent with a rate of descent adjusted to achieve a constant descent gradient to a point 15m (50 ft) above threshold, taking due regard of the minimum crossing altitudes/heights specified for the FAF and any prescribed stepdown fix. If the required visual reference approaching MDA/H is not achieved, or if the MAP is reached before reaching the MDA/H, the missed approach must be initiated. In either case, aircraft are not permitted to go below the MDA/H at any time. The stabilized approach technique is also associated with operator-specified limits of speed, power, configuration and displacement at (a) specified height(s) designed to ensure the stability of the approach path and a requirement for an immediate go-around if these requirements are not met.

NOTE:

1. *To achieve a constant descent gradient where stepdown fixes are specified, descent may be delayed until after passing the FAF, or the FAF crossed at an increased altitude/height. If a greater height is used, ATC clearance should be obtained to ensure separation.*
2. *When using the "stabilized approach" technique in a non-precision approach, the height/altitude at which the missed approach maneuver is initiated is a matter of pilot judgement based on the prevailing conditions and the overriding requirement to remain above the MDA/H. Where an operator specifies an advisory initiation altitude/height (above MDA/H) based on average conditions, the associated visibility requirements should be based on the MDA/H and not the advisory altitude/height.*
3. *In all cases, regardless of the flight technique used, cold temperature correction must be applied to all minimum altitudes (see Part VI, Chapter 3, 3.3).*

The following ICAO tables indicate the specified range of handling speeds for each category of aircraft to perform the maneuvers specified. This speed ranges have been assumed for use in calculating airspace and obstacle clearance requirements for each procedure.

ICAO RULES OF THE AIR — ANNEX 2

Extracted from ICAO Rules of the Air, Annex 2

CHAPTER 1 — DEFINITIONS

See ICAO Definitions published on AIR TRAFFIC CONTROL pages, Series 100.

CHAPTER 2 — APPLICABILITY OF THE RULES OF THE AIR

2.1 TERRITORIAL APPLICATION OF THE RULES OF THE AIR

2.1.1 The rules of the air shall apply to aircraft bearing the nationality and registration marks of a Contracting State, wherever they may be, to the extent that they do not conflict with the rules published by the State having jurisdiction over the territory overflown.

NOTE: The council of the International Civil Aviation Organization resolved, in adopting Annex 2 in April 1948 and Amendment 1 to the said Annex in November 1951, that the Annex constitutes "Rules relating to the flight and manoeuvre of aircraft" within the meaning of Article 12 of the Convention. Over the high seas, therefore, these rules apply without exception.

2.1.2 If, and so long as, a Contracting State has not notified the International Civil Aviation Organization to the contrary, it shall be deemed, as regards aircraft of its registration, to have agreed as follows:

For purposes of flight over those parts of the high seas where a Contracting State has accepted, pursuant to a regional air navigation agreement, the responsibility of providing air traffic services, the "appropriate ATS authority" referred to in this Annex is the relevant authority designated by the State responsible for providing those services.

NOTE: The phrase "regional air navigation agreement" refers to an agreement approved by the Council of ICAO normally on the advice of a Regional Air Navigational Meeting.

2.2 COMPLIANCE WITH THE RULES OF THE AIR

The operation of an aircraft either in flight or on the movement area of an aerodrome shall be in compliance with the general rules and, in addition, when in flight, either with:

a. the visual flight rules, or

b. the instrument flight rules.

NOTE 1: Information relevant to the services provided to aircraft operating in accordance with both visual flight rules and instrument flight rules in the seven ATS airspace classes contained in Annex 11 are published on ENROUTE Page 21.

NOTE 2: A pilot may elect to fly in accordance with instrument flight rules in visual meteorological conditions or he may be required to do so by the appropriate ATS authority.

2.3 RESPONSIBILITY FOR COMPLIANCE WITH THE RULES OF THE AIR

2.3.1 Responsibility of Pilot-in-Command

The pilot-in-command of an aircraft shall, whether manipulating the controls or not, be responsible for the operation of the aircraft in accordance with the rules of the air, except that the pilot-in-command may depart from these rules in circumstances that render such departure absolutely necessary in the interests of safety.

2.3.2 Pre-Flight Action

Before beginning a flight, the pilot-in-command of an aircraft shall become familiar with all available information appropriate to the intended operation. Pre-flight action for flights away from the vicinity of an aerodrome, and for all IFR flights, shall include a careful study of available current weather reports and forecasts, taking into consideration fuel requirements and an alternative course of action if the flight cannot be completed as planned.

2.4 AUTHORITY OF PILOT-IN-COMMAND OF AN AIRCRAFT

The pilot-in-command of an aircraft shall have final authority as to the disposition of the aircraft while in command.

2.5 PROBLEMATIC USE OF PSYCHOACTIVE SUBSTANCES

No person whose function is critical to the safety of aviation (safety-sensitive personnel) shall undertake that function while under the influence of any psychoactive substance, by reason of which human performance is impaired. No such person shall engage in any kind of problematic use of substances.

CHAPTER 3 — GENERAL RULES

3.1 PROTECTION OF PERSONS AND PROPERTY

3.1.1 Negligent or Reckless Operation of Aircraft

An aircraft shall not be operated in a negligent or reckless manner so as to endanger life or property of others.

AIR TRAFFIC MANAGEMENT (DOC 4444)

Extracted from ICAO Document 4444, Fifteenth Edition, PROCEDURES FOR AIR NAVIGATION SERVICES — AIR TRAFFIC MANAGEMENT, herein known as PANS-ATM.

1 DEFINITIONS

Refer to 'International Civil Aviation Organization Definitions' chapter.

4 GENERAL PROVISIONS FOR AIR TRAFFIC SERVICES

4.1 RESPONSIBILITY FOR THE PROVISION OF AIR TRAFFIC CONTROL SERVICE

4.1.1 Area Control Service

Area control service shall be provided:

a. by an area control centre (ACC); or

b. by the unit providing approach control service in a control zone or in a control area of limited extent which is designated primarily for the provision of approach control service, when no ACC is established.

4.1.2 Approach Control Service

Approach control service shall be provided:

a. by an aerodrome control tower or an ACC, when it is necessary or desirable to combine under the responsibility of one unit the functions of the approach control service and those of the aerodrome control service or the area control service; or

b. by an approach control unit, when it is necessary or desirable to establish a separate unit.

NOTE: Approach control service may be provided by a unit collocated with an ACC, or by a control sector within an ACC.

4.1.3 Aerodrome Control Service

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

4.2 RESPONSIBILITY FOR THE PROVISION OF FLIGHT INFORMATION SERVICE AND ALERTING SERVICE

Flight information service and alerting service shall be provided as follows:

a. *within a flight information region (FIR):* by a flight information centre, unless the responsibility for providing such services is assigned to an air traffic control unit having adequate facilities for the exercise of such responsibilities;

b. *within controlled airspace and at controlled aerodromes:* by the relevant air traffic control units.

4.3 DIVISION OF RESPONSIBILITY FOR CONTROL BETWEEN AIR TRAFFIC CONTROL UNITS

4.3.1 General

The appropriate ATS authority shall designate the area of responsibility for each air traffic control (ATC) unit and, when applicable, for individual control sectors within an ATC unit. Where there is more than one ATC working position within a unit or sector, the duties and responsibilities of the individual working positions shall be defined.

4.3.2 Between a Unit Providing Aerodrome Control Service and a Unit Providing Approach Control Service

4.3.2.1 Except for flights which are provided aerodrome control service only, the control of arriving and departing controlled flights shall be divided between units providing aerodrome control service and units providing approach control service as follows:

4.3.2.1.1 *Arriving aircraft.* Control of an arriving aircraft shall be transferred from the unit providing approach control service to the unit providing aerodrome control service when the aircraft:

a. is in the vicinity of the aerodrome, and
   1. it is considered that approach and landing will be completed in visual reference to the ground, or
   2. has reached uninterrupted visual meteorological conditions, or

b. is at a prescribed point or level, or

c. has landed,

as specified in letters of agreement or ATS unit instructions.

4.3.2.1.2 Transfer of communications to the aerodrome controller should be effected at such a point, level or time that clearance to land or alternative instructions, as well as information on essential local traffic, can be issued in a timely manner.

NOTE: Even though there is an approach control unit, control of certain flights may be transferred directly from an ACC to an aerodrome control tower and vice versa, by prior arrangement between the units concerned for the relevant part of approach control service to be provided by the ACC or the aerodrome control tower, as applicable.

4.3.2.1.3 *Departing aircraft.* Control of a departing aircraft shall be transferred from the unit providing aerodrome control service to the unit providing approach control service:

a. when visual meteorological conditions prevail in the vicinity of the aerodrome:
   1. prior to the time the aircraft leaves the vicinity of the aerodrome,
   2. prior to the aircraft entering instrument meteorological conditions, or
   3. when the aircraft is at a prescribed point or level,

   as specified in letters of agreement or ATS unit instructions;

b. when instrument meteorological conditions prevail at the aerodrome:
   1. immediately after the aircraft is airborne, or
   2. when the aircraft is at a prescribed point or level,

APPENDIX 1 -- INSTRUCTIONS FOR AIR-REPORTING BY VOICE COMMUNICATIONS

EXAMPLES

	AS SPOKEN IN RADIOTELEPHONY		AS RECORDED BY THE AIR TRAFFIC SERVICES UNIT AND FORWARDED TO THE METEOROLOGICAL OFFICE CONCERNED
I.[1]	AIREP SPEEDBIRD FIFE SIX AIT POSITION FOWer NINer TOO FIFE NORTH ZERO FIFE ZERO WEST AT WUN TREE WUN SEVen FLIGHT LEVEL TREE WUN ZERO NEXT POSITION FIFE ZERO NORTH ZERO FOWer ZERO WEST AT WUN TREE FIFE FIFE FOLLOWING POINT FIFE ZERO NORTH ZERO TREE ZERO WEST ENDURANCE ZERO AIT TREE ZERO TEMPERATURE MINUS FOWer SEVen WIND TOO FIFE FIFE DEGREES SIX FIFE KNOTS TURBULENCE MODERATE ICING LIGHT	I.	BAW568 4925N050W 1317 F310 MS47 255/65KT TURB MOD ICE FBL
II.[2]	JAPANAIR FOWer FOWer WUN OVER ORDON AT ZERO NINer TREE ZERO FLIGHT LEVEL TREE FIFE ZERO NEXT POSITION ONADE AT WUN ZERO ZERO SEVen FOLLOWING POINT OMPPA TEMPERATURE MINUS FIFE TREE WIND TREE WUN ZERO DEGREES SIX ZERO KILOMETERS PER HOUR TURBULENCE LIGHT ICING LIGHT	II.	JAL441 ORDON 0930 F350 MS53 310/60KMH TURB FBL ICE FBL
III.[3]	AIREP SPECIAL CLIPPER WUN ZERO WUN POSITION FIFE ZERO FOWer FIFE NORTH ZERO TOO ZERO WUN FIFE WEST AT WUN FIFE TREE SIX FLIGHT LEVEL TREE WUN ZERO CLIMBING TO FLIGHT LEVEL TREE FIFE ZERO THUNDERSTORM WITH HAIL	III.	ARS PAA101 5045N02015W 1536 F310 ASC F350 TSGR
IV.[4]	SPECIAL NIUGINI TOO SEVen TREE OVER MADANG AT ZERO AIT FOWer SIX WUN NINer TOUSAND FEET TURBULENCE SEVERE	IV.	ARS ANG273 MD 0846 19000FT TURB SEV

[1] routine air-report for a trans-oceanic flight which has been designated to report routine meteorological observations at meridians spaced at intervals of 10 degrees. The information of the next position, ensuing significant point and endurance are not required for transmission to the meteorological offices concerned.

[2] A routine air-report for a trans-oceanic flight which is required to report routine meteorological observations at specified significant points. The information of the next position and the ensuing significant point are not required for transmission to the meteorological offices concerned

[3] A special air-report which is required because of the occurrence of widespread thunderstorms with hail.

[4] A special air-report which is required because of severe turbulence. The aircraft is on QNH altimeter setting

AERONAUTICAL TELECOMMUNICATIONS

Extracted from ICAO ANNEX 10 (Vol., II) Sixth Edition — AERONAUTICAL TELECOMMUNICATIONS.

5 AERONAUTICAL MOBILE SERVICE — VOICE COMMUNICATIONS

5.2 RADIOTELEPHONY PROCEDURES

5.2.1 General

5.2.1.2 *Language to be Used*

5.2.1.2.1 The air-ground radiotelephony communications shall be conducted in the language normally used by the station on the ground or in the English language.

NOTE 1: The language normally used by the station on the ground may not necessarily be the language of the State in which it is located. A common language may be agreed upon regionally as a requirement for stations on the ground in that region.

NOTE 2: The level of language proficiency required for aeronautical radiotelephony communications is specified in the Appendix to Annex 1.

5.2.1.2.2 The English language shall be available, on request from any aircraft station, at all stations on the ground serving designated airports and routes used by international air services.

5.2.1.2.3 The languages available at a given station on the ground shall form part of the Aeronautical Information Publications and other published aeronautical information concerning such facilities.

5.2.1.4 *Transmission of Numbers in Radiotelephony*

5.2.1.4.1 *Transmission of Numbers*

5.2.1.4.1.1 All numbers, except as prescribed in 5.2.1.4.1.2, shall be transmitted by pronouncing each digit separately.

5.2.1.4.1.2 All numbers used in the transmission of altitude, cloud height, visibility and runway visual range (RVR), which contain whole hundreds and whole thousands, shall be transmitted by pronouncing each digit in the number of hundreds or thousands followed by the word “HUNDRED” or “THOUSAND” as appropriate. Combinations of thousands and whole hundreds shall be transmitted by pronouncing each digit in the number of thousands followed by the word “THOUSAND” followed by the number of hundreds followed by the word “HUNDRED”

NOTE: The following examples illustrate the application of this procedure (see 5.2.1.4.3.1 for pronunciation.

Altitude	*transmitted as*
800	eight hundred
3400	three thousand four hundred
12000	one two thousand
cloud height	*transmitted as*
2200	two thousand two hundred
4300	four thousand three hundred
visibility	*transmitted as*
1000	visibility one thousand
700	visibility seven hundred
runway visual range	*transmitted as*
600	RVR six hundred
1700	RVR one thousand seven hundred

5.2.1.4.1.3 Numbers containing a decimal point shall be transmitted as prescribed in 5.2.1.4.1.1 with the decimal point in appropriate sequence being indicated by the word “DECIMAL”.

NOTE: The following examples illustrate the application of this procedure.

Number	*Transmitted as*
100.3	ONE ZERO ZERO DECIMAL THREE
38143.9	THREE EIGHT ONE FOUR THREE DECIMAL NINE

NOTE: For identification of VHF frequencies the number of digits after the decimal point are determined on the basis of channel spacing (5.2.1.7.3.4.3 refers to frequencies separated by 25 kHz, 5.2.1.7.3.4.4 refers to frequencies separated by 8.33 kHz.

5.2.1.4.1.4 **PANS** — When transmitting time, only the minutes of the hour should normally be required. Each digit should be pronounced separately. However, the hour should be included when any possibility of confusion is likely to result.

NOTE: The following examples illustrate the application of this procedure when applying the provisions of 5.2.1.2.2.

Time	*Statement*
0920 *(9:20 A.M.)*	TOO ZE-RO or ZE-RO NIN-er TOO ZERO
1643 *(4:43 P.M.)*	FOW-er TREE or WUN SIX FOW-er TREE

TRAFFIC INFORMATION BROADCASTS BY AIRCRAFT (TIBA)

Extracted from ICAO Annex 11 — Air Traffic Services – Air Traffic Control Annexes to DOC 7300 (Attachment C)

1 INTRODUCTION AND APPLICABILITY OF BROADCASTS

1.1 Traffic information broadcasts by aircraft are intended to permit reports and relevant supplementary information of an advisory nature to be transmitted by pilots on a designated VHF radiotelephone (RTF) frequency for the information of pilots of other aircraft in the vicinity.

1.2 TIBAs should be introduced only when necessary and as a temporary measure.

1.3 The broadcast procedures should be applied in designated airspace where:

a. there is a need to supplement collision hazard information provided by air traffic services outside controlled airspace; or

b. there is a temporary disruption of normal air traffic services.

1.4 Such airspaces should be identified by the States responsible for provision of air traffic services within these airspaces, if necessary with the assistance of the appropriate ICAO Regional Office(s), and duly promulgated in aeronautical information publications or NOTAM, together with the VHF RTF frequency, the message formats and the procedures to be used. Where, in the case of 1.3 a., more than one State is involved, the airspace should be designated on the basis of regional air navigation agreements and promulgated in Doc 7030.

1.5 When establishing a designated airspace, dates for the review of its applicability at intervals not exceeding 12 months should be agreed by the appropriate ATC authority(ies).

2 DETAILS OF BROADCASTS

2.1 VHF RTF FREQUENCY TO BE USED

2.1.1 The VHF RTF frequency to be used should be determined and promulgated on a regional basis. However, in the case of temporary disruption occurring in controlled airspace, the States responsible may promulgate, as the VHF RTF frequency to be used within the limits of that airspace, a frequency used normally for the provision of air traffic control service within that airspace.

2.1.2 Where VHF is used for air-ground communications with ATS and an aircraft has only two serviceable VHF sets, one should be tuned to the appropriate ATS frequency and the other to the TIBA frequency.

2.2 LISTENING WATCH

A listening watch should be maintained on the TIBA frequency 10 minutes before entering the designated airspace until leaving this airspace. For an aircraft taking off from an aerodrome located within the lateral limits of the designated airspace listening watch should start as soon as appropriate after take-off and be maintained until leaving the airspace.

2.3 TIME OF BROADCASTS

A broadcast should be made:

a. 10 minutes before entering the designated airspace or, for a pilot taking off from an aerodrome located within the lateral limits of the designated airspace, as soon as appropriate after take-off;

b. 10 minutes prior to crossing a reporting point;

c. 10 minutes prior to crossing or joining an ATS route;

d. at 20-minute intervals between distant reporting points;

e. 2 to 5 minutes, where possible, before a change in flight level;

f. at the time of a change in flight level; and

g. at any other time considered necessary by the pilot.

2.4 FORMS OF BROADCAST

2.4.1 The broadcasts other than those indicating changes in flight level, i.e. the broadcasts referred to in 2.3 a., b., c., d. and g., should be in the following form:

ALL STATIONS (necessary to identify a traffic information broadcast)

(call sign)

FLIGHT LEVEL (number) (or CLIMBING[1] TO FLIGHT LEVEL (number))

(direction)

(ATS route) (or DIRECT FROM (position) TO (position))

POSITION (position[2]) AT (time)

ESTIMATING (next reporting point, or the point of crossing or joining a designated ATS route) AT (time)

(call sign)

FLIGHT LEVEL (number)

(direction)

Fictitious example:

"ALL STATIONS WINDAR 671 FLIGHT LEVEL 350 NORTHWEST BOUND DIRECT FROM PUNTA SAGA TO PAMPA POSITION 5040 SOUTH 2010 EAST AT 2358 ESTIMATING CROSSING ROUTE LIMA THREE ONE AT 4930 SOUTH 1920 EAST AT 0012 WINDAR 671 FLIGHT LEVEL 350 NORTHWEST BOUND OUT"

---

1. For the broadcast referred to in 2.3 a. in the case of an aircraft taking off from an aerodrome located within the lateral limits of the designated airspace.

2. For broadcasts made when the aircraft is not near an ATS significant point, the position should be given as accurate as possible and in any case to the nearest 30 minute of latitude and longitude.

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and to see and avoid obstacles in the take-off area. Such aircraft may be operated to take-off minimums shown in Table 3.

The take-off minimums established by an operator must be based upon the height from which the one engine inoperative net take-off flight path can be constructed. The RVR/VIS minimums used may not be lower than either those specified in Table 2 or 3.

Table 2 TAKE-OFF RVR/VIS

Facilities	RVR / VIS (m) [1], [2]	
	CAT A, B & C	CAT D
Approved Operators (with approved lateral guidance system) [3]	75	
Approved Operators [4]	125	150
RL, CL & multiple RVR information [5]	150	200
RL & CL	200	250
RL and/or RCLM [6]	250	300
Nil (Day only)	500	

[1] For RVR/VIS below 400m Low Visibility Procedure must be in use.
[2] The reported RVR/VIS of the initial part of take-off run can be replaced by pilot assessment.
[3] For additional information about Approved Operators refer to the description below this table.
[4] For additional information about Approved Operators refer to the description below this table.
[5] The required RVR value must be achieved for all relevant RVR reporting points except the initial part of take-off run.
[6] For night operations at least RL and runway end lights are required.

Approved Operators:

a. Subject to the approval of the Authority and provided the requirements in paragraphs 1. to 5. below have been met, an operator may reduce the take-off minimum to 125m/150m when:
   1. Low Visibility Procedures are in force,
   2. High intensity CL spaced 15m or less and HIRL spaced 60m or less are in operation,
   3. Crews have satisfactorily completed training in a simulator approved for this procedure,
   4. A 90m visual segment is available from the cockpit at the start of the take-off run,
   5. The required RVR value has been achieved for all of the relevant RVR reporting points.

b. Subject to approval of the Authority, an operator of an aircraft using an approved lateral guidance system or an approved HUD/HUDLS for take-off may reduce the take-off minimum to not lower than RVR 75m provided runway protection and facilities equivalent to Category III landing operations are available.

Table 3 ASSUMED ENGINE FAILURE HEIGHT ABOVE THE RUNWAY VERSUS RVR/VIS

Take-off RVR/VIS	
Assumed engine failure height (ft) above the take-off runway	**RVR/VIS (m)** [1]
50 or less	200
51 - 100	300
101 - 150	400
151 - 200	500
201 - 300	1000
more than 300	1500 [2]

[1] The reported RVR/VIS of the initial part of the take-off run can be replaced by pilot assessment.
[2] 1500m is also applicable if no positive take-off flight path can be constructed.

When reported RVR/VIS is not available, the commander shall not commence take-off unless he can determine that the actual conditions satisfy the applicable take-off minimum.

7 CIRCLE-TO-LAND MINIMUMS (EU-OPS 1)

An operator must ensure that the MDH is not below:

– the State published circling OCA(H),
– the MDH from Table 4,
– the MDH of the preceding instrument approach procedure.

An operator must ensure that the visibility is not below:

– the State published circling VIS,
– the VIS from Table 4,
– the RVR/CMV of the preceding instrument approach procedure.

– TDZ,
– RL,
– other visual references accepted by the authority.

9 LOWER THAN STANDARD CAT I OPERATIONS (EU-OPS 1)

DECISION HEIGHT

A decision height for Lower Than Standard CAT I operations must not be lower than:

– the DH specified in the Aircraft Flight Manual or equivalent documents,
– the minimum height to which the precision approach aid can be used without the required visual reference,
– the OCH for the aircraft category,
– the decision height the flight crew is authorized to operate,
– 200ft

whichever is higher.

RVR/CMV

The lowest RVR values to be used by an operator for Lower Than Standard CAT I operations are shown in Table 11 below.

Table 11 RVR/CMV LOWER THAN STANDARD CAT I OPERATIONS

	RVR/CMV (m) depending on Class of Lighting Facility [1], [2]			
DH (ft)	FALS	IALS	BALS	NALS
200 – 210	400 [3]	500	600	750
211 – 220	450	550	650	800
221 – 230	500	600	700	900
231 – 240	500	650	750	1000
241 – 249	550	700	800	1100

[1] For operations to a minimum RVR of 450m Class I/T/1 ILS required.
[2] For operations with RVR less than 450m Class II/D/2 ILS required.
[3] For operations with RVR below 450m TDZ and/or CL required.

VISUAL REFERENCE

The pilot shall not continue an approach below decision height unless visual reference containing one of the following elements is attained and can be maintained:

– at least 3 consecutive lights being the centerline of the approach lights,
– TDZ, CL or RL,
– or a combination of the above.

The visual reference must include a lateral element of the ground pattern (like an approach lighting crossbar, landing threshold, a barrette of the TDZ) unless the operation is conducted utilizing an approved HUDLS to at least 150ft above threshold.

TYPE OF FACILITY

An ILS/MLS which supports Lower Than Standard CAT I operations must be an unrestricted facility with a straight-in course equal to or less than 3° offset and the ILS must be certificated to:

– Class I/T/1 for operations to a minimum RVR of 450m,
– Class II/D/2 for operations to less than 450m RVR.

Single ILS facilities are only acceptable if Level 2 performance is provided.

APPROVAL

To conduct Lower Than Standard CAT I operations:

– **The operator shall be approved by the authority.**
– The approach shall be flown auto-coupled to an autoland or an approved HUDLS shall be used to at least 150ft above threshold.
– The aircraft shall be certified in accordance to **CS-AWO** to conduct CAT II operations.
– The autoland system shall be approved for CAT IIIA operations.
– In service proving requirements shall be completed (aircraft, aerodrome, runway).
– Training shall be completed (low visibility operations – training & qualification applicable to CAT II operations as of Appendix 1 to OPS 1.450).
– The operator must ensure that Low Visibility Procedures are established and in operation at the landing aerodrome.

Due to the requirements above Jeppesen will publish minimums for Lower Than Standard CAT I operations on operator's request on tailored charts.

10 STANDARD CAT II OPERATIONS (EU-OPS 1)

DECISION HEIGHT

An operator must ensure that the decision height is not lower than:

– The minimum decision height specified in the Aircraft Flight Manual or equivalent documents,
– the minimum height to which the precision approach aid can be used without the required visual reference,
– the OCH for the aircraft category,
– the decision height to which the flight crew is authorized to operate,
– 100ft,

whichever is higher.

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RVR

The lowest minimums to be used by an operator for CAT II operations are shown in Table 12 below.

Table 12 RVR STANDARD CAT II OPERATIONS

DH (ft)	RVR (m) CAT A, B & C [1]	RVR (m) CAT D [2]
100 – 120	300	300/350 [3]
121 – 140	400	
141 and above	450	

[1] Auto-coupled or Approved HUDLS to below DH – which means continued use of the automatic flight control system or the HUDLS down to a height of 80% of the DH.

[2] Auto-coupled or Approved HUDLS to below DH – which means continued use of the automatic flight control system or the HUDLS down to a height of 80% of the DH.

[3] RVR 300m may be used for aircraft conducting an autoland.

VISUAL REFERENCE

The pilot shall not continue an approach below decision height unless visual reference containing one of the following elements is attained and can be maintained:

- at least 3 consecutive lights being the centerline of the approach lights,
- TDZ, CL or RL,
- or a combination of the above.

The visual reference must include a lateral element of the ground pattern (like an approach lighting crossbar, landing threshold, a barrette of the TDZ) unless the operation is conducted utilizing an approved HUDLS to touchdown.

11 OTHER THAN STANDARD CAT II OPERATIONS (EU-OPS 1)

DECISION HEIGHT

An operator must ensure that the decision height is not lower than:

- the minimum decision height specified in the Aircraft Flight Manual or equivalent documents,
- the minimum height to which the precision approach aid can be used without the required visual reference,
- the OCH for the aircraft category,
- the decision height to which the flight crew is authorized to operate,
- 100ft,

whichever is higher.

RVR

The lowest minimums depend on DH and available approach light system as shown in Table 13 below.

Table 13 RVR OTHER THAN STANDARD CAT II OPERATIONS

	RVR (m) [1], [2], [3]				
	FALS		IALS	BALS	NALS
DH (ft)	CAT A, B & C	CAT D	CAT A - D	CAT A - D	CAT A - D
100 – 120	350 [4]	400 [5]	450	600	700
121 – 140	400 [6]	450	500	600	700
141 – 160	450	500	500	600	750
161 – 199	450	500	550	650	750

[1] For operations to a minimum RVR of 450m Class I/T/1 ILS required.

[2] For operations with RVR less than 450m Class II/D/2 ILS required.

[3] Autoland or approved HUDLS utilized to touchdown.

[4] For operations in RVR of 400m or less CL must be available.

[5] For operations in RVR of 400m or less CL must be available.

[6] For operations in RVR of 400m or less CL must be available.

To conduct Other Than Standard CAT II operations the operator must ensure that appropriate low visibility procedures are established and in operation at the landing aerodrome.

VISUAL REFERENCE

The pilot shall not continue an approach below decision height unless visual reference containing one of the following elements is attained and can be maintained:

- at least 3 consecutive lights being the centerline of the approach lights,
- TDZ, CL or RL,

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– or a combination of the above.

The visual reference must include a lateral element of the ground pattern (i.e. an approach lighting crossbar, landing threshold, a barrette of the TDZ) unless the operation is conducted utilizing an approved HUDLS to touchdown.

TYPE OF FACILITY

An ILS/MLS which supports Other Than Standard CAT II operations shall be an unrestricted facility with a straight-in course equal to or less than 3° offset and the ILS shall be certificated to:

– Class I/T/1 for operations to a minimum RVR of 450m and to a DH of 200ft or more,

– Class II/D/2 for operations in RVR of less than 450m or to a DH of less than 200ft.

Single ILS facilities are only acceptable if Level 2 performance is provided.

Jeppesen will publish minimums for Other Than Standard CAT II operations only if the procedure is approved for their use by the State of the aerodrome.

12 CAT III OPERATIONS (EU-OPS 1)

CAT III operations are subdivided as follows:

a. CAT IIIA: decision height lower than 100ft and RVR not less than 200m,

b. CAT IIIB: decision height lower than 100ft or no decision height and RVR less than 200m but not less than 75m.

DECISION HEIGHT

For operations in which a decision height is used, an operator must ensure that the decision height is not lower than:

– the minimum decision height specified in the Aircraft Flight Manual or equivalent documents,

– the minimum height to which the precision approach aid can be used without the required visual reference,

– the decision height to which the flight crew is authorized to operate.

Operations with no decision height may only be conducted if:

– the operation with no decision height is authorized in the Aircraft Flight Manual,

– the approach aid and aerodrome facilities can support such operations,

– the operator has an approval for CAT III operations with no decision height.

NOTE: In the case of a CAT III runway it may be assumed that operations with no decision height can be supported unless specifically restricted as published in the AIP or by NOTAM.

RVR

The lowest minimums to be used by an operator for CAT III operations are shown in Table 14.

Table 14 CAT III OPERATIONS

CAT	Decision Height (ft) [1]	Roll-out Control/ Guidance System	RVR (m)
IIIA	Less than 100	Not required	200
IIIB	Less than 100	Fail-passive	150 [2]
IIIB	Less than 50	Fail-passive	125
IIIB	Less than 50 or No Decision Height	Fail-operational [3]	75

[1] Flight control system redundancy is determined under CS-AWO by the minimum certificated decision height.

[2] For aircraft certificated in accordance with CS-AWO 321 (b)(3) or equivalent.

[3] The fail-operational system referred to may consist of a fail-operational hybrid system.

VISUAL REFERENCE

For CAT IIIA and for CAT IIIB operations either with fail-passive flight control systems or with the use of an approved HUDLS, a pilot may not continue an approach below the decision height unless a visual reference of one of the following elements is attained and can be maintained:

– at least 3 consecutive lights being the centerline of the approach lights,

– TDZ, CL or RL,

– or a combination of the above.

For CAT IIIB operations conducted either with fail-operational flight control systems or with a fail-operational hybrid landing system (comprising e.g. a HUDLS) using a decision height a pilot may not continue an approach below the decision height unless a visual reference containing at least one centerline light is attained and can be maintained.

13 FAILED OR DOWNGRADED EQUIPMENT (EU-OPS 1)

The effect on landing minimums is shown in Table 15 below.

Table 15 FAILED OR DOWNGRADED EQUIPMENT – EFFECT ON LANDING MINIMUMS

Failed or Downgraded Equipment	Effect on Landing Minimums				
	CAT IIIB	CAT IIIA	CAT II	CAT I	Non-precision
ILS stand-by transmitter	Not allowed		No effect		
Outer Marker	No effect if replaced by published equivalent position				Not applicable

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Table 15 FAILED OR DOWNGRADED EQUIPMENT – EFFECT ON LANDING MINIMUMS (continued)

Failed or Downgraded Equipment	Effect on Landing Minimums				
	CAT IIIB	CAT IIIA	CAT II	CAT I	Non-precision
Middle Marker	No effect				No effect unless used as MAP
TDZ RVR assessment system	May be temporarily replaced with Midpoint RVR if approved by the State of the Aerodrome. RVR may be reported by human observation.			No effect	
Midpoint or Rollout RVR	No effect				
Anemometer for runway in use	No effect if other ground source available				
Ceilometer	No effect				
Approach Lights	Not allowed for operations with DH > 50ft		Not allowed [1]	Minimums as for NALS	
Approach lights except the last 210m	No effect		Not allowed [2]	Minimums as for BALS	
Approach lights except the last 420m	No effect		No effect [3]	Minimums as for IALS	
Standby power for approach lights	No effect				
Whole runway light system	Not allowed			Day: Minimums as for NALS Night: Not allowed	
Edge lights	Day only Night: Not allowed				
Centerline lights	Day: RVR 300m Night: Not allowed		Day: RVR 300m Night: RVR 550m	No effect	
CL lights spacing increased to 30m	RVR 150m	No effect			
TDZ lights	Day: RVR 200m Night: RVR 300m	Day: RVR 300m Night: RVR 550m		No effect	
Standby power for runway lights	Not allowed			No effect	
Taxiway light system	No effect - except delays due to reduced movement rate				

[1] Other than Standard CAT II: No effect.
[2] Other than Standard CAT II: No effect.
[3] Other than Standard CAT II: No effect.

NOTE 1: Applicable conditions for the use of the table above:

- *Multiple failures of runway lights are not acceptable.*
- *Deficiencies of approach and runway lights are treated separately.*
- *CAT II/III operations: A combination of deficiencies in runway lights and RVR assessment equipment is not allowed.*
- *Failures other than ILS affect RVR only and not DH .*

NOTE 2: For CAT IIIB operations with no decision height, an operator shall ensure that, for aircraft authorized to conduct no decision height operations with the lowest RVR limitations, the following applies in addition to the table above:

- *RVR: At least one RVR value must be available at the aerodrome.*
- *Runway lights:*
  - *a. No RL or no CL: Day - RVR 200m.*
  - *b. No RL or no CL: Night - Not allowed.*
  - *c. No TDZ lights – No restriction.*
  - *d. No Stand-by power to RL: Day – RVR 200m.*
  - *e. No Stand-by power to RL: Night – Not allowed.*

14 ENHANCED VISION SYSTEMS (EU-OPS 1)

The Enhanced Vision System (EVS) may only be used for ILS, MLS, PAR, GLS and APV operations with a DH not lower than 200ft or on approaches when using approved vertical flight path guidance to a MDH or DH not below 250ft.

A pilot using an EVS certificated for the purpose of this paragraph and used in accordance with the procedures and limitations of the approved flight manual, may:

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The weather minimums must be specified and approved for each runway to be used considering the following items:

- the obstacle situation,
- the type of glide path reference and runway guidance,
- the minimum visual reference required at DA/MDA,
- available airborne equipment,
- pilot qualification and special aerodrome familiarization,
- aircraft flight manual limitations and procedures,
- missed approach criteria.

Jeppesen will calculate AOM for those approaches according table 6 and the lower limits of tables 7, 8 and 9. A caution note will be added, that the pilot has to check the Steep Approach section of the operators Flight Operations Manual.

17 PLANNING MINIMUMS (EU-OPS 1)

An operator shall only select an aerodrome as a take-off alternate aerodrome when appropriate weather reports or forecasts or any combination thereof indicate, that during a period commencing one hour before and ending one hour after the estimated time of arrival, the weather conditions will be at or above the applicable landing minimum. The ceiling must be taken into account when only non-precision or circling approaches are available. Any limitation related to one-engine-inoperative operations must be taken into account.

An operator shall only select the destination aerodrome when appropriate weather reports or forecasts or any combination thereof indicate, that during a period commencing one hour before and ending one hour after the estimated time of arrival, the weather conditions will be at or above the applicable landing minimum as follows:

- RVR/VIS,
- ceiling at or above MDH for non-precision or circling approaches,

or two destination alternate aerodromes are selected if the weather conditions are below the applicable planning minimums.

An operator shall only select an aerodrome as:

- destination alternate aerodrome,
- isolated aerodrome,
- enroute alternate aerodrome (ERA),
- 3% ERA (an ERA selected for the purpose of reducing contingency fuel to 3%)

when appropriate weather reports or forecasts or any combination thereof indicate, that during a period commencing one hour before and ending one hour after the estimated time of arrival, the weather conditions will be at or above the planning minimums as in Table 17 below.

Table 17 PLANNING MINIMUMS

Type of Approach	Planning Minimums
CAT II and III	CAT I [1]
CAT I	Non-precision [2], [3]
Non-precision	Non-precision [4], [5]
Circling	Circling

[1] RVR.
[2] RVR.
[3] The ceiling must be at or above the MDH.
[4] RVR.
[5] The ceiling must be at or above the MDH.

An operator shall not select an aerodrome as an ETOPS enroute alternate aerodrome when appropriate weather reports or forecasts or any combination thereof indicate, that between the anticipated time of landing until one hour after the latest possible time of landing, conditions calculated by adding the additional limits of Table 18 below will exist. An operator shall include in the Operations Manual the method for determining the operating minima at the planned ETOPS enroute alternate aerodrome.

Jeppesen will publish planning minimums on request only.

Table 18 PLANNING MINIMUMS – ETOPS

Approach Facility	Alternate Airfield Ceiling	Weather Minimums (VIS/RVR)
Precision approach	Authorized DH + 200ft	Authorized VIS + 800m
Non-precision approach or Circling approach	Authorized MDH + 400ft	Authorized VIS + 1500m

DEFINITIONS AND ABBREVIATIONS

Australian definitions and abbreviations applicable to this section which are not published or differ from those published in INTRODUCTION — Chart Glossary. See also Definitions and Abbreviations sections in the Emergency, Meteorology and Terminal chapters of this manual.

1 DEFINITIONS

ADS-C AGREEMENT — A reporting plan which establishes the conditions of ADS-C data reporting (i.e. data required by the air traffic services unit and frequency of ADS-C reports which have to be agreed to prior to the provision of air traffic services).

AERODROME — A defined area of land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and movement of aircraft.

AERODROME BEACON — An aeronautical beacon used to indicate the location of an aerodrome from the air.

AERODROME CONTROL SERVICE — ATC service for aerodrome traffic.

AERODROME CONTROL TOWER — A unit established to provide ATC service to aerodrome traffic.

AERODROME PROPRIETOR — Any Owner, Licensee, Authority, Corporation, or any other body which has a legal responsibility for a particular aerodrome.

AERODROME TRAFFIC — All traffic on the maneuvering area of an aerodrome, and all aircraft flying in, entering, or leaving the traffic circuit.

AERODROME TRAFFIC CIRCUIT — The specified path to be flown by aircraft flying in, entering, or leaving the traffic circuit.

AERONAUTICAL BEACON — An aeronautical ground light visible at all azimuths, either continuously or intermittently, to designate a particular point on the surface of the earth.

AERONAUTICAL INFORMATION CIRCULAR (AIC) — A notice containing information that does not qualify for the origination of a NOTAM, or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters.

AERONAUTICAL INFORMATION PUBLICATION (AIP) — A publication issued by or with the authority of a state and containing aeronautical information of a lasting character essential to air navigation.

AIP SUPPLEMENT (SUP) — Temporary changes to the information contained in the AIP which are published by means of special pages.

AIRCRAFT CLASSIFICATION NUMBER (ACN) — A number expressing the relative effect of an aircraft on a pavement for a specific standard sub-grade category.

AIRCRAFT PARKING POSITION TAXILANE — A portion of an apron designated as a taxiway and intended to provide access to aircraft parking positions only.

AIR-GROUND COMMUNICATIONS — Two-way communications between aircraft and stations on the surface of the earth.

AIR TAXIING — Movement of a helicopter / VTOL above the surface of an aerodrome at low ground speed and at heights normally associated with ground effect.

AIR TRAFFIC CONTROL CLEARANCE — Authorization for an aircraft to proceed under conditions specified by an Air Traffic Control unit.

NOTE: For convenience, the term "Air Traffic Control Clearance" is frequently abbreviated to "Clearance" when used in appropriate context.

AIR TRAFFIC CONTROL INSTRUCTIONS — Directives issued by air traffic control for the purpose of requiring a pilot to take a specific action.

AIR TRAFFIC CONTROL SERVICE — A service provided for the purpose of:

a. preventing collisions:
   1. between aircraft; and
   2. on the maneuvering area between aircraft and obstructions; and
b. expediting and maintaining an orderly flow of air traffic.

AIR TRAFFIC SERVICE (ATS) — A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service, or aerodrome control service).

AIR TRANSIT — The airborne movement of a helicopter that is:

a. for the expeditious transit from one place within an aerodrome to another place within the aerodrome;
b. at or below 100 ft above the surface; and
c. at speeds greater than those used in air taxiing.

AIRWAYS CLEARANCE — A clearance, issued by ATC, to operate in controlled airspace along a designated track or route at a specified level to a specified point or flight planned destination.

ALTERNATE AERODROME — An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or land at the aerodrome of intended landing.

ALTIMETER SETTING — A pressure datum which when set on the sub-scale of a sensitive altimeter causes the altimeter to indicate vertical displacement from that datum. A pressure-type altimeter calibrated in accordance with Standard Atmosphere may be used to indicate altitude, height or flight levels, as follows:

a. when set to QNH or Area QNH it will indicate altitude;
b. when set to Standard Pressure (1013.2 hPa) it may be used to indicate flight levels.

ALTIMETER SETTING REGION — Airspace 10,000 ft and below where the sub-scale of a pressure sensitive altimeter is set to QNH or Area QNH.

APPROACH CONTROL SERVICE — ATC service for arriving or departing flights.

APPROACH SEQUENCE — The order in which two or more aircraft are cleared to approach to land at the aerodrome.

AIR TRAFFIC RULES AND SERVICES

Civil Aviation Regulations (CAR), Civil Aviation Orders (CAO), Air Services Regulations (ASR) and Air Navigation Regulations (ANR) may be referenced in the text of this section; however, they are not published herein.

1 AERONAUTICAL INFORMATION SERVICES

1.1 AERONAUTICAL AUTHORITY

1.1.1 Responsibility for civil aviation in Australia and its Territories rests with two organizations: the Civil Aviation Safety Authority (CASA) and Airservices Australia (Airservices). CASA is responsible for safety regulation of all civil aviation in Australia, including the safety regulation of Airservices' provision of support services. Requests for advice on Australia's civil aviation support services including Air Traffic Services (ATS), Rescue and Fire Fighting (RFF) services, Aeronautical Information Service (AIS) and Search and Rescue (SAR) may be directed to:

Business Replay Post
PERMIT No 1986 – CIVIC SQUARE

Address:	Airservices Australia Aeronautical Information Service GPO Box 367 CANBERRA ACT AUSTRALIA 2601
Fax:	(02) 6268 5689 61 2 6268 5689
Telex:	YSHOYOYX CIVILAIR Canberra
E-Mail:	docs.amend@airservicesaustralia.com
Internet:	www.airservicesaustralia.com/publications/ccard/default.asp

1.2 AERONAUTICAL INFORMATION SERVICE (AIS)

1.2.1 **The Aeronautical Information Service (AIS)** is established pursuant to para 8.(1) of the Air Services Act 1995. The AIS is responsible for the collection, collation and dissemination of aeronautical information and instructions relating to the safety, regularity and efficiency of air navigation within the areas covered.

1.2.2 An International NOTAM Office (NOF) is established at Brisbane (YBBBYNYX) for the purpose of the international exchange of NOTAM.

1.2.3 **Area of Responsibility —** The AIS is responsible for the collection and dissemination of aeronautical information for the entire territory of Australia and its associated airspace, and for the airspace over the high seas encompassed by the Brisbane and Melbourne FIRs.

1.3 PUBLISHED AERONAUTICAL INFORMATION

1.3.1 The information in this Airway Manual is extracted from Australian Aeronautical Information Publications (AIP), which provides the primary source of information concerning rules of the air and procedures for the safe and efficient movement of aircraft in Australian airspace. The Airway Manual information and/or the AIP should be read in conjunction with CASRs, CARs, CAOs and CAAPs which detail the statutory requirements.

1.3.1.1 Documents and charts issued in accordance with the AIRAC cycle become effective at 1600 hours UTC on the day prior to the nominated date unless otherwise notified; e.g., a document with an AIRAC date 26 Jun becomes effective 06251600UTC (i.e., during Australian Eastern Standard Time, becomes effective at 0200 hours local on 26 Jun).

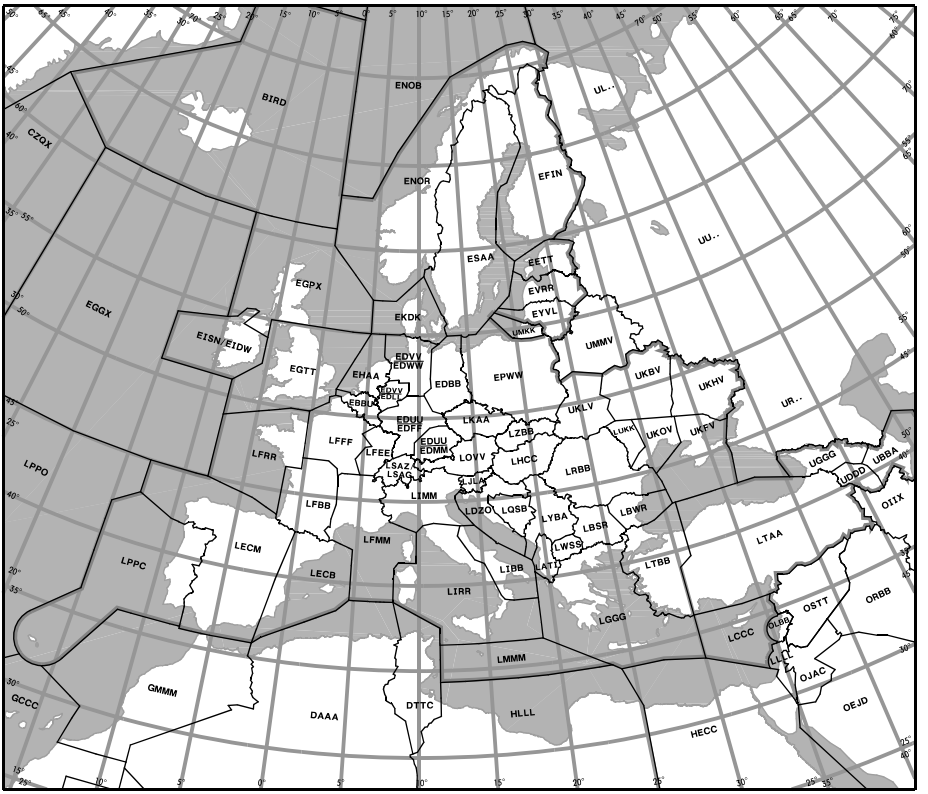
1.3.2 NOTAM provide information that is of direct operational significance and which may immediately affect aircraft operations. A NOTAM is issued in a format containing fields (Q) and (A) to (G) as follows:

Q –	This field consists of eight sub fields separated by oblique strokes. 1. FIR in which the location listed in field A) is located. 2. NOTAM code. This is a coded version of the subject and status of the NOTAM preceded by the letter 'Q' 3. Traffic field. Signifies if a NOTAM affects IFR or VFR flights 4. Purpose field. Signifies if a NOTAM is for immediate attention and/or for briefings or concerning flight operations. 5. Scope field. Signifies if the NOTAM is an aerodrome, enroute or warning NOTAM 6. Lower level of the activity in the NOTAM. If no level specified the default is 000. 7. Upper level of the activity in the NOTAM. If no level specified, the default is 999. 8. Coordinates. For location specific NOTAM, the latitude/longitude of the location listed in field A) of the NOTAM is listed. If not a specific location, the field is left blank. Example of Q field: Q) YBBB/QMRAU/IV/BO/A/000/999/2723S15307E *NOTE: The list of codes used in the Q) field is available in ICAO Annex 15 and Doc−8126. Briefings obtained from NAIPS are decoded.*
A –	Location identification.
B –	Time of commencement of information contained in Field E; or, time of publication where prior notification is required. In this case, Field E commences with "WEF.. (Date/Time)..". This Date/Time will then reflect the actual commencement time of the NOTAM information.

BASIC RNAV (B-RNAV) IN THE AIRSPACE OF THE MEMBER STATES OF THE EUROPEAN CIVIL AVIATION CONFERENCE (ECAC)

B-RNAV - Required Navigation Performance 5 (RNP5) is mandatory as the primary means of navigation in ECAC enroute airspace, including designated feeder routes (SIDs & STARs) in and out of notified Terminal Areas. The lowest applicable flight level might vary throughout the ECAC States and is indicated within the limits of designated airspace tabulation on Enroute chart cover panels in bold type. For Equipment and Requirements refer also to ATC pages 551 and following.

Airspace of ECAC member states



Albania	* Egypt	* Jordan	Portugal
Armenia	Estonia	Latvia	Romania
Austria	Finland	* Lebanon	Serbia - Montenegro
Azerbaijan	France	Lithuania	Slovakia
Belgium	* Georgia	Luxembourg	Slovenia
Bosnia and Herzegovina	Germany	Macedonia,F.Y.R. of	Spain
Bulgaria	Greece	Malta	Sweden
Croatia	Hungary	Moldova	Switzerland
Cyprus	Iceland	Monaco	* Syria
Czech Rep.	Ireland	Netherlands	Turkey
Denmark	* Israel	Norway	Ukraine
	Italy	Poland	United Kingdom

* Non ECAC State member.

8.33KHZ CHANNEL SPACING

CHANNEL – FREQUENCY PAIRING TABLE (Extract between 132.0000 and 132.1000)

Name of Channel	Frequency of Channel (MHz)	Channel Spacing (kHz)	Channel to be transmitted as:
132.000	132.0000	25	ONE THREE TWO DECIMAL ZERO
132.010	132.0083	8.33	ONE THREE TWO DECIMAL ZERO ONE ZERO
132.015	132.0166	8.33	ONE THREE TWO DECIMAL ZERO ONE FIVE
132.025	132.0250	25	ONE THREE TWO DECIMAL ZERO TWO FIVE
132.035	132.0333	8.33	ONE THREE TWO DECIMAL ZERO THREE FIVE
132.040	132.0416	8.33	ONE THREE TWO DECIMAL ZERO FOUR ZERO
132.050	132.0500	25	ONE THREE TWO DECIMAL ZERO FIVE ZERO
132.060	132.0583	8.33	ONE THREE TWO DECIMAL ZERO SIX ZERO
132.065	132.0666	8.33	ONE THREE TWO DECIMAL ZERO SIX FIVE
132.075	132.0750	25	ONE THREE TWO DECIMAL ZERO SEVEN FIVE
132.085	132.0833	8.33	ONE THREE TWO DECIMAL ZERO EIGHT FIVE
132.090	132.0916	8.33	ONE THREE TWO DECIMAL ZERO NINE ZERO
132.100	132.1000	25	ONE THREE TWO DECIMAL ONE

If ATC is uncertain about the 8.33kHz equipage status of any aircraft or the UHF status of a State aircraft, then the following phraseology applies:

Circumstance	Phraseology
To request confirmation of 8.33kHz capability	CONFIRM EIGHT POINT THREE THREE
To indicate 8.33kHz capability	[1]AFFIRM EIGHT POINT THREE THREE
To indicate lack of 8.33kHz capability	[1]NEGATIVE EIGHT POINT THREE THREE
To request UHF capability	CONFIRM UHF
To indicate UHF capability	[1]AFFIRM UHF
To indicate lack of UHF capability	[1]NEGATIVE UHF
To request status in respect of 8.33kHz exemption	CONFIRM EIGHT POINT THREE THREE EXEMPTED
To indicate 8.33kHz exempted status	[1]AFFIRM EIGHT POINT THREE THREE EXEMPTED
To indicate 8.33kHz non-exempted status	[1]NEGATIVE EIGHT POINT THREE THREE EXEMPTED
To indicate that a certain clearance is given because otherwise a non-8.33 equipped and/or non-exempted aircraft would enter the airspace of mandatory carriage	DUE EIGHT POINT THREE THREE REQUIREMENT

1.Denotes pilot transmission.

The above phraseology is approved by ICAO in the Procedures for Air Navigation Services Air Traffic Management (PANS-ATM, Doc 4444).

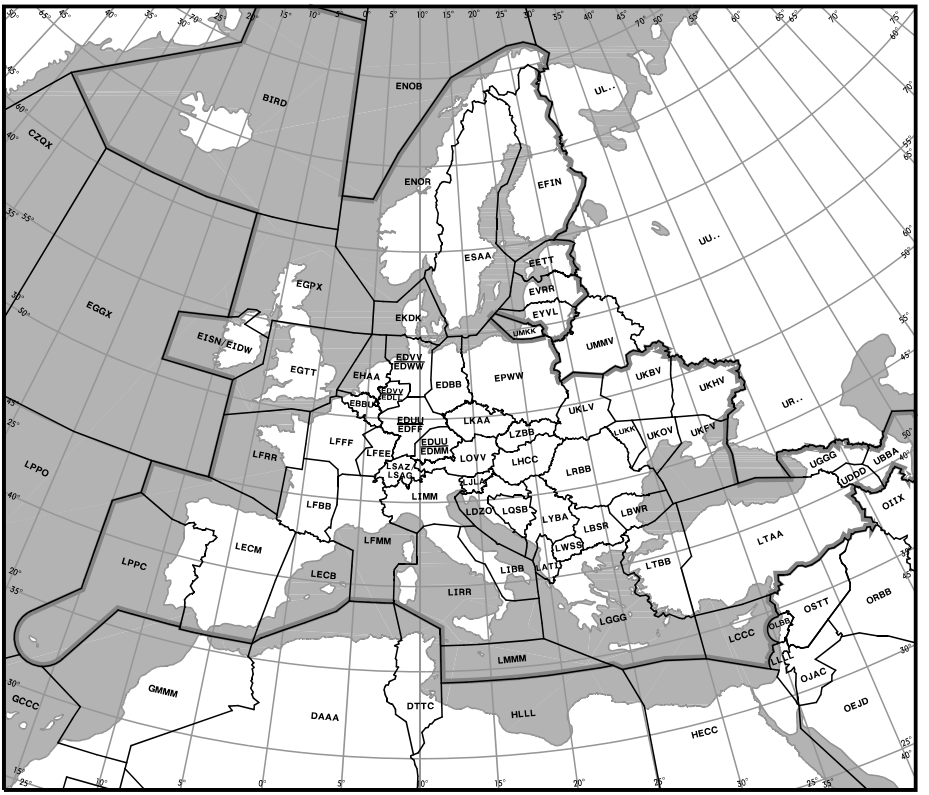
Jeppesen publications

- 50 or 25kHz spacing	118.0	or	118.00	or	118.000	is shown as	118.0
	118.02	or	118.025			is shown as	118.02
	118.15	or	118.150			is shown as	118.15
	118.17	or	118.175			is shown as	118.17
- 8.33kHz spacing	The "**CHANNEL numbers**" are always shown with three decimal places (e.g. 132.035).						

BASIC RNAV (B-RNAV) IN THE AIRSPACE OF THE MEMBER STATES OF THE EUROPEAN CIVIL AVIATION CONFERENCE (ECAC)

B-RNAV - Required Navigation Performance 5 (RNP5) is mandatory as the primary means of navigation in ECAC enroute airspace, including designated feeder routes (SIDs & STARs) in and out of notified Terminal Areas. The lowest applicable flight level might vary throughout the ECAC States and is indicated within the limits of designated airspace tabulation on Enroute chart cover panels in bold type. For Equipment and Requirements refer also to ATC pages 551 and following.

Airspace of ECAC member states



Albania	* Egypt	* Jordan	Portugal
Armenia	Estonia	Latvia	Romania
Austria	Finland	* Lebanon	Serbia - Montenegro
Azerbaijan	France	Lithuania	Slovakia
Belgium	* Georgia	Luxembourg	Slovenia
Bosnia and Herzegovina	Germany	Macedonia,F.Y.R. of	Spain
Bulgaria	Greece	Malta	Sweden
Croatia	Hungary	Moldova	Switzerland
Cyprus	Iceland	Monaco	* Syria
Czech Rep.	Ireland	Netherlands	Turkey
Denmark	* Israel	Norway	Ukraine
	Italy	Poland	United Kingdom

* Non ECAC State member.

SECTION 3. AIRPORT MARKING AIDS AND SIGNS

2-3-1 GENERAL

a. Airport pavement markings and signs provide information that is useful to a pilot during takeoff, landing, and taxiing.

b. Uniformity in airport markings and signs from one airport to another enhances safety and improves efficiency. Pilots are encouraged to work with the operators of the airports they use to achieve the marking and sign standards described in this section.

c. Pilots who encounter ineffective, incorrect, or confusing markings or signs on an airport should make the operator of the airport aware of the problem. These situations may also be reported under the Aviation Safety Reporting Program as described in paragraph 7-6-1, Aviation Safety Reporting Program. Pilots may also report these situations to the FAA regional airports division.

d. The markings and signs described in this section of the AIM reflect the current FAA recommended standards.

REFERENCE- *AC 150/5340-1, Standards for Airport Markings. AC 150/5340-18, Standards for Airport Sign Systems.*

2-3-2 AIRPORT PAVEMENT MARKINGS

a. **General.** For the purpose of this presentation the Airport Pavement Markings have been grouped into four areas:

1. **Runway Markings.**
2. **Taxiway Markings.**
3. **Holding Position Markings.**
4. **Other Markings.**

b. **Marking Colors.** Markings for runways are white. Markings defining the landing area on a heliport are also white except for hospital heliports which use a red “H” on a white cross. Markings for taxiways, areas not intended for use by aircraft (closed and hazardous areas), and holding positions (even if they are on a runway) are yellow.

2-3-3 RUNWAY MARKINGS

a. **General.** There are three types of markings for runways: visual, nonprecision instrument, and precision instrument. TBL 2-3-1 identifies the marking elements for each type of runway and TBL 2-3-2 identifies runway threshold markings.

TABLE 2-3-1 Runway Marking Elements

Marking Element	Visual Runway	Nonprecision Instrument Runway	Precision Instrument Runway
Designation	X	X	X
Centerline	X	X	X
Threshold	X[1]	X	X
Aiming Point	X[2]	X	X
Touchdown Zone			X
Side Stripes			X

[1] On runways used, or intended to be used, by international commercial transports.

[2] On runways 4,000 feet (1200 m) or longer used by jet aircraft.

AZORES - RULES AND PROCEDURES

GENERAL

In general, the air traffic rules and procedures in force and the organization of the air traffic services are in conformity with ICAO Standards, Recommended Practices and Procedures.

Units of measurement used in connection with all air traffic services for Azores:

MEASUREMENT OF	UNIT
Distance used in navigation, position reporting, etc., generally in excess of 2 to 3 nautical miles	Kilometers, Nautical Miles and Tenths[1]
Relatively short distances such as those relating to aerodromes (e.g., runway lengths)	Meters
Altitude, elevations, and heights	Meters, Feet[1]
Horizontal speed including wind speed	Kilometers Per Hour, Knots[1]
Vertical speed	Meters Per Second, Feet Per Minute[1]
Wind direction for landing and taking off	Degrees Magnetic
Wind direction except for landing and taking off	Degrees True
Visibility including runway visual range	Kilometers or Meters
Altimeter setting, atmospheric pressure	Hectopascals
Temperature	Degrees Celsius
Weight	Kilograms
Time	Hours and minutes, the day of 24 hrs. beginning at midnight UTC

[1] Alternate unit

WGS-84 IMPLEMENTATION STATUS

WGS-84 compliant.

FLIGHT PROCEDURES

HOLDING

Holding procedures comply with ATC-Chapter Part IV. Holding procedures, table "Holding Speeds ICAO DOC 8168".

PROCEDURE LIMITATIONS AND OPTIONS

Instrument approach procedures for civil airports comply with PANS-OPS, Document 8168, Volume II, 4th Edition.

Instrument approach procedures for military aerodromes are based on the United States Standards for Terminal Procedures (TERPS).

AIRPORT OPERATING MINIMUMS

Portugal publishes OCA(H)s for civil airports and DA/MDA, ceiling and visibilities for military aerodromes.

Jeppesen charted minimums are not below State minimums.

ATS AIRSPACE CLASSIFICATIONS

Portugal has adopted the ICAO ATS airspace classification as listed in ATC-Chapter "ICAO ATS Airspace Classifications-Annex 11".

Within Santa Maria Oceanic FIR the airspace is classified “ A”, “C” and “G”.

VFR flights shall not be operated above FL200 in airspace class “C” at transonic and supersonic speeds.

SPECIAL REQUIREMENTS AND REGULATIONS

FLIGHT PLANNING

Overflights of Santa Maria TMA shall flight plan as follows:

Flights above FL155 shall flight plan

- a great circle course between significant points at 20W and 30W, or
- a great circle course between significant points at 20W and VORDME ‘FRS’, or
- a great circle course between significant points at 20W and 30W and one of the following radio aids: VORDME‘ VMG’, VORDME ‘VFL’ or VORDME ‘VSM’.

Flights below FL155 shall flight plan in accordance with ATS routes.

Any flight intending to fly in accordance with VFR rules within Santa Maria TMA controlled airspace shall submit a flight plan. The flight plan and any other associated messages must be addressed to LPZZFPLS and:

- LPZZFPLM, if departure or destination is LPAZ;
- LPZZFPLP, if departure or destination is LPPD;
- LPLAZTZX and LPLAZPZX, if departure or destination is LPLA;
- LPZZFPLH, if departure or destination is LPGR, LPSJ, LPPI or LPHR;
- LPZZFPLF, if departure or destination is LPFL or LPCR;

All Flightdata concerning MIL ACFT flying from, to or overflying Portugal (Mainland) must be addressed to LPAMYWYB, MIL INFO Center and also to LPPTYWYB and LPAMYWYA.

For flights intending to operate within the North Atlantic MNPS airspace during any portion of their flight the letter ’X’ shall be inserted in item 10 of the ICAO FPL after the letter ’S’ to clearly indicate that the aircraft is capable of complying with MNPS.

For flights intending to operate within the North Atlantic MNPS airspace between FL290 and 410 inclusive, during any portion of their flight the letter ‘W’ shall be inserted in item 10 of the ICAO FPL after the letters ‘S’ and ‘X’ to clearly indicate that the aircraft has received State approval for RVSM operations.

NETHERLANDS - RULES AND PROCEDURES

b. in controlled airspace class “A”;

c. in controlled airspace class “B”.

4.1 In class “A”, “B”, “D” and “E” a flight visibility of 8Km is also prescribed for flights below FL100, except as follows:

Airspace	Visibility
Nieuw Milligen TMA A, C, D and E	up to and including FL65 (FL95[2]), class “E” airspace, minimum visibility 8Km (5Km[2]); above FL65 (FL95[1, 2]), class “B” airspace minimum flight visibility 8Km.
Nieuw Milligen TMA B, G1 and G2	class “E” airspace, minimum flight visibility 8Km (5Km[2])
Rotterdam TMA 1, 2 and 3, Eelde TMA	class “E” airspace, minimum flight visibility 8Km.
Maastricht TMA 1 and 2	up to FL95 class “D” airspace, minimum flight visibility 8Km, at and above FL95 class “B” airspace, minimum flight visibility 8Km.

[1] Upper limit Nieuw Milligen TMA is FL95.

[2] From FRI 1500 to SUN 2200 and during legal holidays.

In class “G” airspace the following flight visibilities are applied:

a) above 900m (3000ft) AMSL: 8Km,

b) at or below 900m (3000ft) AMSL lower flight visibilities to 1500m may be permitted for flights operated at speeds that will give adequate opportunity to observe other traffic or any obstacle in time to avoid collision.

4.4 IFR compulsory at night.

NORWAY - RULES AND PROCEDURES

GENERAL

In general, the air traffic rules and procedures in force and the organization of the air traffic services are in conformity with ICAO Standards, Recommended Practices and Procedures.

Units of measurement used in connection with all air traffic services in Norway:

MEASUREMENT OF	UNIT
Distance used in navigation, position reporting, etc., generally in excess of 2 to 3 nautical miles	Nautical Miles and Tenths
Relatively short distances such as those relating to aerodromes (e.g., runway lengths)	Meters
Altitude, elevations, and heights	Feet, Meters[1]
Horizontal speed including wind speed	Knots
Vertical speed	Feet Per Minute, Meters Per Second[1]
Wind direction for landing and taking off	Degrees Magnetic
Wind direction except for landing and taking off	Degrees True
Visibility including runway visual range	Kilometers or Meters
Altimeter setting, atmospheric pressure	Hectopascals
Temperature	Degrees Celsius
Weight	Kilograms
Time	Hours and minutes, the day of 24 hrs beginning at midnight UTC.

[1] Secondary unit

WGS-84 IMPLEMENTATION STATUS

WGS-84 compliant.

FLIGHT PROCEDURES

HOLDING

Holding procedures comply with ATC-Chapter "Flight-Procedures (DOC8168) Part IV. Holding Procedures",... table "Holding Speeds ICAO DOC 8168:, except for holding procedures on Instrument Approach Charts marked PANS-OPS, which comply with table "PANS-OPS Second Edition ICAO DOC 8168".

PROCEDURE LIMITATIONS AND OPTIONS

Instrument approach procedures are in accordance with the new PANS-OPS, Document 8168, Volume II, 4th Edition, except for Instrument Approach Charts marked with PANS-OPS, which comply with PANS-OPS, Document 8168, Volume II, Second Edition.

AIRPORT OPERATING MINIMUMS

Norway does not publish State airport operating minimums. Norway publishes OCA(H)s.

PILOT CONTROLLED LIGHTING (PCL)

A system of switching on approach lights and the landing area lights from aircraft has entered operational service at a number of Norwegian airports. Information on the availability of such system is given in Airport Directory pages and on instrument approach charts for the respective airport.

To activate the system:

– select the appropriate VHF-frequency for the AFIS unit,

– press the transmitter button for minimum 5 seconds.

The lights will then be switched on and remain lighted for 26 minutes.

ATS AIRSPACE CLASSIFICATIONS

Norway has adopted the ICAO ATS airspace classification as listed in ATC-Chapter "ICAO ATS Airspace Classifications - Annex 11". Within Norwegian FIRs/UIRs, however, only the airspace classes "A," "C," "D," "E," and "G" are used. Controlled airspace above FL195 is basically classified as class "A" airspace.

Enroute GAT VFR flights shall not be operated above FL195 in class "C" airspace.

In class "G" airspace, IFR flights are not required to establish radio communication with ATS except when operating within a traffic information zone (TIZ) or traffic information area (TIA), where communication shall be established with the appropriate AFIS unit. In class "G" airspace established as a TIZ or TIA also VFR flights are required to establish radio communication with the appropriate AFIS unit. Traffic avoidance advice will not be provided by Norwegian ATC units (concerns airspace class "D").

For differences from ICAO VMC specifications refer to ATC-Chapter Norway "Differences from ICAO Standards and Procedures".

SPECIAL REQUIREMENTS AND REGULATIONS

RADAR VECTORING

In Norwegian TMAs is the responsibility for temperature correction of minimum altitudes and for obstacle clearance with the radar controller.

BASIC AREA NAVIGATION (B-RNAV) EXEMPTIONS

Domestic flights operating between FL95 and FL195 and within the Oslo TMA between 5000ft AMSL and FL95 are exempted from the requirement to carry B-RNAV equipment.

IFPS/CFMU OPERATIONS

The Integrated Initial Flight Plan Processing System element of the EUROCONTROL Central Flow Management Unit (CFMU) is the **sole** source for the distribution of the IFR General Air Traffic (GAT) FPL and associated messages to ATS units within the IFPS. The only required addresses are those of the **two** IFPS Units (IFPU) at Haren (Brussels) and Bretigny (Paris).

PORTUGAL - RULES AND PROCEDURES

The following information also refers to Madeira Is.

GENERAL

In general, the air traffic rules and procedures in force and the organization of the air traffic services are in conformity with ICAO Standards, Recommended Practices and Procedures.

Units of measurement used in connection with all air traffic services in Portugal:

MEASUREMENT OF	UNIT
Distance used in navigation, position reporting, etc., generally in excess of 2 to 3 nautical miles	Kilometers, Nautical Miles and Tenths[1]
Relatively short distances such as those relating to aerodromes (e.g., runway lengths)	Meters
Altitude, elevations, and heights	Meters, Feet[1]
Horizontal speed including wind speed	Kilometers per Hour, Knots[1]
Vertical speed	Meters per Second, Feet per Minute[1]
Wind direction for landing and taking off	Degrees Magnetic
Wind direction except for landing and taking off	Degrees True
Visibility including runway visual range	Kilometers or Meters
Altimeter setting, atmospheric pressure	Hectopascals
Temperature	Degrees Celsius
Weight	Kilograms
Time	Hours and minutes, the day of 24 hrs beginning at midnight UTC

[1] Alternative unit

WGS-84 IMPLEMENTATION STATUS

WGS-84 compliant.

FLIGHT PROCEDURES

HOLDING

Holding procedures comply with ATC-Chapter Part IV. Holding procedures, table “Holding Speeds ICAO DOC 8168”.

PROCEDURE LIMITATIONS AND OPTIONS

Instrument approach procedures for civil airports comply with PANS-OPS, Document 8168, Volume II, 4th Edition. Instrument approach procedures for military aerodromes are based on the United States Standards for Terminal Procedures (TERPS).

AIRPORT OPERATING MINIMUMS

Portugal publishes OCA(H)s for civil airports and DA/MDA, ceiling and visibilities for military aerodromes.

Jeppesen charted minimums are not below State minimums.

NOISE ABATEMENT PROCEDURES

The following procedures may at any time be departed from to the extent necessary for avoiding immediate danger. Every operator of aircraft using the airport, shall ensure at all times that aircraft are operated in a manner calculated to cause the least disturbance practicable in areas surrounding the airport.

Departures: For aircraft licensed in accordance with ICAO ANNEX 16, Chapter 2, Noise Abatement Procedure NADP A is required.

For aircraft licensed in accordance with ICAO ANNEX 16, Chapter 3 as well as B737-200 as far as the noise levels for take-off pursuant to ICAO ANNEX 16, Chapter 3 have provably been reached by supplementary equipment, Noise Abatement Procedure NADP B is required.

For details about NADP A & B refer to ATC Chapter “Flight Procedures (DOC 8168) Appendix to Chapter 3 - Noise Abatement”.

Aeroplanes such as supersonic aeroplanes not using wing flaps for take-off should reduce thrust before attaining 1000ft but not lower than 500ft.

ATS AIRSPACE CLASSIFICATIONS

Portugal has adopted the ICAO ATS airspace classification as listed in ATC-Chapter “ICAO ATS Airspace Classifications-Annex 11”.

Within Lisbon FIR/UIR the airspace is classified “C”, “D” and “G”.

Within Santa Maria Oceanic FIR the airspace is classified “A”, “C” and “G”.

The airspace classification “D” has been allocated to the restricted areas LPR60A/60B/42A/42B/51A/51BN/51BS while these airspace volumes are affected to military use. When these airspace volumes are available for GAT use its classification will change to “C”. Within class “G” airspace at and below 3000ft AMSL and clear of cloud and in sight of the surface helicopters may be operated when their speed, having regard to the visibility, is reasonable.

VFR flights shall not be operated above FL200 in airspace class “C” at transonic and supersonic speeds.

SPECIAL REQUIREMENTS AND REGULATIONS

FLIGHT PLANNING

For flights intending to operate within the North Atlantic MNPS airspace during any portion of their flight the letter ’X’ shall be inserted in item 10 of the ICAO FPL after the letter ’S’ to clearly indicate that the aircraft is capable of complying with MNPS.

RUSSIA - RULES AND PROCEDURES

This information also applies to Tajikistan and Turkmenistan, as covered by common aeronautical publications. Accordingly, each of the above States is to be substituted for the term "Russia(n)" in the following text, as appropriate.

GENERAL

In general, the air traffic rules and procedures in force, and the organization of air traffic services are in conformity with ICAO Standards, Recommended Practices and Procedures.

Units of measurement used in all air and ground operations are as listed in the following table:

MEASUREMENT OF	UNIT
Distance used in navigation, position reporting, etc.	Kilometers
Relatively short distances such as those relating to aerodromes (e.g., runway lengths)	Kilometers and Meters
Altitude, elevations, and heights	Meters
Horizontal speed including wind speed	Kilometers per Hour, Meters per Second
Vertical speed	Meters per Second
Wind direction for landing and taking off	Degrees True
Visibility	Kilometers or Meters
Runway visual range	Meters
Altimeter setting, atmospheric pressure	Millimeters, Millibars (Hectopascals)
Temperature	Degrees Celsius (Centigrade)
Weight	Metric Tons or Kilograms
Time	Hours & Minutes, the day of 24 hrs beginning at midnight UTC

WGS-84 IMPLEMENTATION STATUS

The National Geodetic System - 1990 (PZ-90) is used in the Russian Federation as geodetic reference datum. Geodetic System - 1942 (SK-42) is used until carrying out the accurate Geodetic survey according to the coordinate system PZ-90.

World Geodetic System - 1984 (WGS-84) is not used in the Russian Federation at present.

FLIGHT PROCEDURES

HOLDING

Holding procedures basically comply with ATC-Chapter “Flight Procedures (DOC) 8168) IV. Holding Procedures”, table “Holding Speeds ICAO DOC 8168”.

PROCEDURE LIMITATIONS AND OPTIONS

Instrument Approach Procedures are basically in accordance with PANS-OPS, Document 8168, Volume II.

Precision Approach Radar (PAR) terminates 1640ft (500m) before the runway.

Missed approach point (MAP) in a non-precision approach is that point where MDA(H) on the extended runway centerline is reached.

Speed Restrictions: See following “ENTRY INTO TERMINAL AREA”.

OUTER MARKER (OM) AND MIDDLE MARKER (MM) MODULATION

All outer markers (OM) and middle markers (MM) are 3000Hz modulated. The crossing of these markers will be indicated by the white instead of the blue or amber marker beacon light.

AIRPORT OPERATING MINIMUMS

Russia does not publish State Airport Operating Minimums. Russia publishes Obstacle Clearance Heights (OCHs).

ATS AIRSPACE CLASSIFICATIONS

Russia has adopted the ICAO ATS airspace classification as listed in ATC-Chapter “ICAO ATS Airspace Classifications - Annex 11”.

All CTA airspace is class “A” airspace at altitudes from the lower safe flight level up to the upper allowed flight level along airways. TMA (CTR) airspace is not classified. All FIR airspace is class “G” airspace from the lower safe flight level up to the upper allowed flight level, except the airspace of the airways. The airspace of the airways within FIR is classified as class “A” airspace.

LONGITUDINAL SEPARATION

The minimum longitudinal separation intervals for IFR filghts under continuous radar control are established as follows:

a. between aircraft proceeding along the same route at the same flight level (altitude); along the airways and routes outside them not less than 30 Km; within TMA not less than 20 Km, within TMA equipped with automated ATS systems (flight management systems) or secondary surveillance aids not less than 10 Km; in the take-off and landing area 5 Km;

b. between aircraft while one aircraft is intersecting the flight level (altitude) occupied by another aircraft flying on opposite track; while intersecting the opposite flight level (altitude), occupied by another aircraft 30 Km at the intersection moment (maintaining 10 Km lateral separation);

c. between aircraft while on aircraft is intersecting the flight level (altitude) occupied by another aircraft flying on the same track not less than 20 Km at the moment of intersecting;

d. between aircraft proceeding along the intersecting routes at the same flight level (altitude) not less than 40 Km at the moment of intersecting by one aircraft the flight rout of another aircraft.

WEST AFRICA - RULES AND PROCEDURES

The term WEST AFRICA covers following States which are provided with a common Aeronautical Information Service by the "Agence pour la Sécurité de la Navigation Aérienne en Afrique et Madagascar (ASECNA)": Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea, Gabon, Guinea Bissau, Ivory Coast, Mali, Madagascar[1] , Mauritania, Niger, Senegal, Togo.

[1] Rules and Procedures listed below are common to these ASECNA-States. For Madagascar, however, separate ATC pages have been created, containing the regulations hereunder as well as additional information specific for this State.

GENERAL

In general, the air traffic rules and procedures in force and the organization of the air traffic services are in conformity with ICAO Standards, Recommended Practices and Procedures.

Units of measurement used in connection with all air traffic services in West Africa:

MEASUREMENT OF	UNIT
Distance used in navigation, position reporting, etc., generally in excess of 2 to 3 nautical miles	Nautical Miles and Tenths
Relatively short distances such as those relating to aerodromes (e.g., runway lengths)	Meters
Altitude, elevations, and heights	Meters, Feet[1]
Horizontal speed including wind speed	Knots
Vertical speed	Feet per Minute
Wind direction for landing and taking off	Degrees Magnetic
Wind direction except for landing and taking off	Degrees True
Visibility including runway visual range	Kilometers or Meters
Altimeter setting, atmospheric pressure	Hectopascals
Temperature	Degrees Celsius
Weight	Metric Tons or Kilograms
Time	Hours and minutes, the day of 24 hrs beginning at midnight UTC.
[1] Unit used on instrument approach charts.	

WGS-84 IMPLEMENTATION STATUS

WGS-84 compliant.

FLIGHT PROCEDURES

HOLDING

No information available.

PROCEDURE LIMITATIONS AND OPTIONS

Instrument Approach Procedures with OCA(H)s comply with the new PANS-OPS, Document 8168, Volume II.

AIRPORT OPERATING MINIMUMS

ASECNA publishes DH, MDH, and visibilities for straight-in and circling approaches. In addition, ceilings are required for circling approaches. Minimum visibility requirements are published for take-off.

Exceptions: Minimums for Dakar, Douala and Lome airports are in accordance with JAR-OPS 1, Subparts D and E. For approach ban and additional information, see ATC EU-OPS1 AERODROME OPERATING MINIMUMS (AOM).

Jeppesen published minimums are not below State minimums.

ATS AIRSPACE CLASSIFICATIONS

ASECNA States have adopted the ICAO ATS airspace classification as listed on ATC ICAO ATS AIRSPACE CLASSIFICATION. Airspace classes "B" and "E", however, are not used within ASECNA airspace.

No speed limitation is applied to IFR flights and VFR flights below FL100.

Within class "F" and "G" airspace two-way radio communication is also required for VFR flights.

For differences from ICAO VMC specifications see relevant paragraph below.

SPECIAL REQUIREMENTS AND REGULATIONS

COMMUNICATIONS

All aircraft on VFR flights, and aircraft on IFR flights outside controlled airspace, shall maintain a listening watch on the frequency of a radio station providing flight information service in the flight information region and file with that station information as to their position, unless otherwise authorized by the State overflown.

POSITION REPORTING PROCEDURES

Position reports additional to those required by the general position reporting procedures shall be made when entering or leaving controlled or advisory airspace.

The last position report before passing from one FIR to an adjacent FIR shall also be made to the ATS unit serving the airspace about to be entered.

OPERATIONS AT UNCONTROLLED AIRPORTS

a. Arriving aircraft:
   1. Ten minutes prior to the ETA the pilot shall maintain a listening watch on frequency 118.1MHz and effect a blind transmission of the following message.
      – Station (airport);