3. Minimum requirements for supplemental oxygen for non-pressurised helicopters

SUPPLY FOR	DURATION AND PRESSURE ALTITUDE
1. All occupants of cockpit seats on duty in cockpit	Entire flight time at pressure altitudes above 10 000 feet.
2. All required cabin crew members	Entire flight time at pressure altitudes above 13 000 feet and for any period exceeding 30 minutes at pressure altitudes above 10 000 feet but not exceeding 13 000 feet.
3. 100% of passengers (See Note)	Entire flight time at pressure altitudes above 13 000 feet.
4. 10% of passengers (See Note	Entire flight time after 30 minutes at pressure altitudes greater than 10 000 feet but not exceeding 13 000 feet.

Note: For the purpose of this table 'passengers' means passengers actually carried and includes infants.

127.05.22 HAND FIRE EXTINGUISHERS

1. Hand fire extinguishers

The operator or pilot-in-command may not operate a helicopter unless hand fire extinguishers are provided for use in crew, passenger and, as applicable, cargo compartments and galleys in accordance with the following:

(1) The type and quantity of extinguishing agent must be suitable for the kinds of fires likely to occur in the compartment where the extinguisher is intended to be used and, for personnel compartments, must minimise the hazard of toxic gas concentration.

(2) At least one hand fire extinguisher, containing Halon 1211 (bromochloro-difluoromethane, $CBrClF_2$), or equivalent as the extinguishing agent, must be conveniently located in the cockpit for use by the flight crew.

(3) At least one hand fire extinguisher must be located in, or readily accessible for use in, each galley not located on the main passenger deck.

(4) At least one readily accessible hand fire extinguisher must be available for use in each cargo compartment which is accessible to crew members during flight for the purpose of fire fighting.

(5) At least the following number of hand fire extinguishers must be conveniently located to provide adequate availability for use in each passenger compartment:

Passenger compartment seating capacity	Number required
7 to 30	1
31 to 60	2
61 and more	3

127.05.24 MEGAPHONES

1. Megaphones

(1) The operator or pilot-in-command may not operate a helicopter with a maximum approved passenger seating configuration of more than 19 seats and carrying one or more passengers unless it is equipped with portable

battery-powered megaphones readily accessible for use by crew members during an emergency evacuation, to the following scales:

(a) For each passenger compartment:

Passenger seating configuration	Number of megaphones required
19 to 99	1
100 or more	2

(b) For aeroplanes with more than one passenger compartment, in all cases when the total passenger seating configuration is more than 19 seats, at least 1 megaphone is required.

(2) When one megaphone is required, it must be readily accessible from a cabin crew member's assigned seat. Where two or more megaphones are required, they must be suitably distributed in the passenger cabin(s) and readily accessible to cabin crew members assigned to direct emergency evacuations. This does not necessarily require megaphones to be positioned such that they can be reached by a cabin crew member when strapped in a cabin crew member's seat.

(3) Unless the megaphone is clearly visible, its location must be indicated by a placard or sign, and appropriate symbols may be used to supplement the placard or sign.

127.05.25 EMERGENCY LIGHTING

1. Emergency lighting

The helicopter must be equipped with -

(1) an emergency lighting system having an independent power supply to provide a source of general cabin illumination to facilitate the evacuation of the helicopter; and

(2) illuminated emergency exit marking and locating signs.

127.05.26 AUTOMATIC EMERGENCY LOCATOR TRANSMITTER

1. Distress frequencies

The operator or pilot-in-command must ensure that the automatic emergency locator transmitter (ELT) is capable of transmitting on the distress frequencies 121,5 MHz and 243 MHz, except that, where the whole of a proposed flight is within an area where, for search and rescue purposes, only one of these frequencies is required, the use of that single frequency may be specifically authorised, if so agreed by the authority responsible for search and rescue in the area concerned.

2. Types of ELTs

Types of ELTs are defined as follows:

2.1 **Automatic Fixed (ELT (AF))**

This type of ELT is intended to be permanently attached to the helicopter before and after a crash and is designed to aid search and rescue teams in locating a crash site;

2.2 **Automatic Portable (ELT (AP))**

This type of ELT is intended to be rigidly attached to the helicopter before a crash, but readily removable from the helicopter after a crash. It functions as an ELT during the crash sequence. If the ELT does not employ an integral antenna, the helicopter-mounted antenna may be disconnected and an auxiliary antenna (stores on the ELT case) attached to the ELT. The ELT can be tethered to a survivor or a life raft. This type of ELT is intended to aid search and rescue teams in locating the crash site or survivor(s);

2.3 **Automatic Deployable (ELT (AD))**

This type of ELT is intended to be rigidly attached to the helicopter before the crash and automatically ejected and deployed after the crash sensor has determined that a crash has occurred. This type of ELT should float in water and is intended to aid search and rescue teams in locating the crash site.

3. Installation

To minimise the possibility of damage in the event of crash impact, the ELT should be rigidly fixed to the helicopter structure as far aft as practicable with its antenna and connections so arranged as to maximise the probability of the signal being radiated after a crash.

127.05.28 LIFE RAFTS AND SURVIVAL RADIO EQUIPMENT FOR EXTENDED OVER-WATER FLIGHTS

1. Equipment

(1) The operator or pilot-in-command must ensure that the helicopter is equipped with -

(a) in the case of a helicopter carrying less than 12 persons, a minimum of one life raft with a rated capacity of not less than the maximum number of persons on board;

(b) in the case of a helicopter carrying 12 persons or more, a minimum of two life rafts sufficient together to accommodate all persons capable of being carried on board. Should one life raft of the largest rated capacity be lost, the overload capacity of the remaining life raft(s) must be sufficient to accommodate all persons in the helicopter;

(c) one emergency locator transmitter;

(d) emergency exit lighting; and

(e) life saving equipment including means of sustaining life as appropriate to the flight to be undertaken.

(2) Each life raft must conform to the following specifications:

(a) It must be of an approved design and stowed so as to facilitate its ready use in an emergency;

(b) it must be radar conspicuous to standard airborne radar equipment;

(c) when carrying more than one life raft on board, at least 50 per cent must be jettisonable by the crew while seated at their normal station, where necessary by remote control; and

(d) those life rafts which are not jettisonable by remote control or by the crew, must be of such mass as to permit handling by one person. A mass of 40 kilograms must be considered a maximum mass.

(3) Each life raft must contain at least the following:

(a) One approved survivor locator light;

(b) one approved visual signalling device;

(c) one canopy, for use as a sail, sunshade or rain catcher;

(d) one radar reflector;

(e) one 20 m retaining line designed to hold the life raft near the helicopter but to release it if the helicopter becomes totally submerged;

(f) one sea anchor;

(g) one survival kit, appropriately, equipped for the route to be flown, which must contain at least the following:

(i) One life raft repair kit;

(ii) one bailing bucket;

(iii) one signalling mirror;

(iv) one police whistle;

(v) one buoyant raft knife;

(vi) one supplementary means of inflation;

(vii) seasickness tablets;

(viii) one first aid kit;

(ix) one portable means of illumination;

(x) one half litre of pure water and one sea water desalting kit; and

(xi) one comprehensive illustrated survival booklet.

(4) Batteries used in the ELTs must be replaced, or recharged, if the battery is rechargeable, when the equipment has been in use for more than one cumulative hour, and also when 50 per cent of their useful life or, if rechargeable, 50 per cent of their useful life of charge, as established by the equipment manufacturer, has expired.

The new expiry date for the replacement, or recharged, battery must be legibly marked on the outside of the equipment. The battery useful life, or useful life of charge, requirements specified in this subparagraph, do not apply to batteries, such as water-activated batteries, which are essentially unaffected during probable storage intervals.

127.05.29 SURVIVAL EQUIPMENT

1. Survival equipment

The operator or pilot-in-command may not operate a helicopter across areas in which search and rescue would be especially difficult, unless it is equipped with the following:

(1) Signalling equipment to make the pyrotechnical distress signals prescribed in TS 127.11.10;

(2) at least one ELT; and

(3) additional survival equipment for the route to be flown taking account of the number of persons on board as prescribed in paragraph 3.

2. Interpretation

For the purposes of this technical standard, the expression "area in which search and rescue would be especially difficult" means -

(1) an area so designated by the State responsible for managing search and rescue; or

(2) an area which is largely uninhabited and where -

(a) the State responsible for managing search and rescue has not published any information to confirm that search and rescue would not be especially difficult; and

(b) the State referred to in (a) does not, as a matter of policy, designate areas as being especially difficult for search and rescue.

3. Additional survival equipment

(1) The following additional survival equipment must be carried when required:

(a) 500 ml of water for each 4, or fraction of 4, persons on board;

(b) one knife;

(c) first aid equipment;

(d) one set of air/ground codes.

(2) In addition, when polar conditions are expected, the following should be carried:

(a) A means for melting snow;

(b) one snow shovel and one ice saw;

(c) sleeping bags for use by one third of all persons on board and space blankets for the remainder or space blankets for all passengers on board; and

(d) one Arctic/polar suit for each crew member carried.

4. Duplicates

If any item of equipment contained in the above list is already carried on board the helicopter in accordance with another requirement, there is no need for this to be duplicated.

5. Location

Unless the survival equipment is clearly visible, its location must be indicated by a placard or sign, and appropriate symbols may be used to supplement the placard or sign.

127.05.33 COMMUNICATION EQUIPMENT

1. General

(1) The operator or pilot-in-command must ensure that a flight does not commence unless the communication and navigation equipment required under Subpart 5 of Part 127, is -

(a) approved and installed in accordance with the requirements applicable to them, including the minimum performance standard and the operational and airworthiness requirements;

(b) installed in such manner that the failure of any single unit required for either communication or navigation purposes, or both, will not result in the inability to communicate and/or navigate safely on the route being flown;

(c) in an operable condition for the kind of operation being conducted except as provided in the MEL; and

(d) so arranged that if equipment is to be used by one flight crew member at his or her station during flight, it must be readily operable from his or her station. When a single item of equipment is required to be operated by more than one flight crew member, it must be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

(2) Communication and navigation equipment minimum performance standards are those prescribed in the applicable NAM-TSO, unless different performance standards are prescribed. Communication and navigation equipment complying with design and performance specifications other than NAM-TSO on the date of commencement of the CARs, may remain in service, or be installed, unless additional requirements are prescribed in Subpart 5 of Part 127.

2. Radio equipment

(1) The operator or pilot-in-command may not operate a helicopter unless it is equipped with radio equipment required for the kind of operation being conducted.

(2) Where two independent (separate and complete) radio systems are required, each system must have an independent antenna installation except that, where rigidly supported non-wire antennae or other antenna installations or equivalent reliability are used, only one antenna is required.

(3) The radio communication equipment required to comply with subparagraph (1), must also provide for communication on the aeronautical emergency frequency 121,5 MHz.

3. Audio selector panel

The operator or pilot-in-command may not operate a helicopter under IFR unless it is equipped with an audio selector panel accessible to each required flight crew member.

4. Radio equipment for operations under VFR over routes navigated by reference to visual landmarks

The operator or pilot-in-command may not operate a helicopter under VFR over routes than can be navigated by reference to visual landmarks, unless it is equipped with the radio equipment (communication and SSR transponder equipment) necessary under normal operating conditions to fulfil the following:

(1) Communicate with appropriate ground stations;

(2) communicate with appropriate air traffic service facilities from any point in controlled airspace within which flights are intended;

(3) receive meteorological information; and

(4) reply to SSR interrogations as required for the route being flown.

5. Communication and navigation equipment for operations under IFR, or under VFR over routes not navigated by reference to visual landmarks

(1) The operator or pilot-in-command may not operate a helicopter under IFR, or under VFR over routes that cannot be navigated by reference to visual landmarks, unless the helicopter is equipped with -

(a) two independent radio communication systems necessary under normal operating conditions to communicate with an appropriate ground station from any point on the route;

(b) two independent navigation aids appropriate to the route/area to be flown;

(c) an approach aid suitable for the destination and alternate aerodromes;

(d) an area navigation system when area navigation is required for the route/area being flown;

(e) an additional VOR receiving system on any route, or part thereof, where navigation is based only on VOR signals;

(f) an additional ADF system on any route, or part thereof, where navigation is based only on NDB signals; and

(g) SSR transponder equipment as required for the route/area being flown.

(2) The operator or pilot-in-command may operate a helicopter that is not equipped with the navigation equipment specified in subparagraph (1)(e) or (f), provided that it is equipped with alternative equipment authorised, for the route/area being flown, by the Director. The reliability and the accuracy of alternative equipment must allow safe navigation for the intended route.

(3) The above requirements may be met by combinations of instruments or by integrated flight systems or by a combination of parameters on electronic displays provided that the information so available to each required pilot is not less than that provided by the instruments and associated equipment as specified above.

(4) Where not more than one item of equipment specified in subparagraph (1), is unserviceable when the helicopter is about to begin a flight, the helicopter may nevertheless take off on that flight if -

(a) it is not reasonably practicable for the repair or replacement of that item to be carried out, before the beginning of the flight;

(b) the helicopter has not made more than one flight since the item was last serviceable; and

(c) the pilot-in-command is satisfied that, taking into account the latest information available as to the route/area and aerodrome to be used,

including any planned diversion, and the weather conditions likely to be encountered, the flight can be made safely and in accordance with any relevant requirements of the appropriate air traffic service unit.

127.06.2 QUALITY ASSURANCE SYSTEM

1. Minimum standards for a quality assurance system

(1) The quality assurance system referred to in CAR 127.06.2(2), must include -

(a) a clear definition of the level of quality the operator intends to achieve;

(b) a quality assurance programme that contains procedures designed to verify that all operations are being conducted in accordance with all the applicable requirements, standards and procedures;

(c) a procedure that sets out the level and frequency of the internal reviews;

(d) a procedure to record the findings and communicate them to management;

(e) a list of responsible persons;

(f) procedures by which other quality indicators such as facility malfunction reports, incidents, occurrences, complaints and defects are brought into the quality assurance system;

(g) procedures for management analysis and overview;

(h) procedures for rectifying any deficiencies which may be found; and

(i) procedures for documenting the complete review process from the inspection to the satisfactory management review so that this is available to the Director during a safety inspection and audit.

(2) For maintenance purposes, the quality assurance system must, in addition, include at least the following functions:

(a) Monitoring that the activities of maintenance responsibility are being performed in accordance with the approved procedures;

(b) monitoring that all contracted maintenance is carried out in accordance with the contract; and

(c) monitoring the continued compliance with the requirements prescribed in Subpart 10 of Part 127.

(3) Measures must be taken to ensure that the system is understood, implemented and complied with at all levels.

(4) The quality assurance system must be documented in the operations manual referred to in CAR 127.04.3.

2. Compliance with procedures for operations inspection, certification and continued surveillance

The quality assurance system must be established in accordance with the current edition of ICAO Doc 8335, “Manual of Procedures for Operations Inspection, Certification and Continued Surveillance”.

127.06.5 APPLICATION FOR AIR OPERATOR CERTIFICATE OR AMENDMENT THEREOF

1. Form of application

The form referred to in CAR 127.06.5, in which application must be made for the issuing of an air operator certificate, or an amendment thereof, is contained in Annexure C.

127.06.6 ADJUDICATION OF APPLICATION AND ISSUING OF CERTIFICATE

1. Form of certificate

The form referred to in CAR 127.06.6(4), on which an air operator certificate is issued, is contained in Annexure D.

127.06.11 STATISTICAL INFORMATION

1. Statistical information

The statistical information referred to in CAR 127.06.11, that must be furnished to the Director, is the appropriate statistical information required by -

(1) the International Civil Aviation Organisation, in the Manual on the ICAO Statistics Programme, Doc 9060, 4th edition, 1994; and

(2) the Southern African Development Community Protocol on Transport, Communications and Meteorology of 24 August 1996, Chapter 9.

127.06.15 RENEWAL OF CERTIFICATE

1. Form of application

The form in which an application for the renewal of an air operator certificate must be made, is contained in Annexure C.

127.07.2 APPLICATION FOR FOREIGN AIR OPERATOR PERMIT OR AMENDMENT THEREOF

1. Form of application

The form referred to in CAR 127.07.2, in which application must be made for the issuing of a foreign air operator permit, or an amendment thereof, is contained in Annexure E.

127.07.3 ADJUDICATION OF APPLICATION AND ISSUING OF PERMIT

1. Form of permit

The form referred to in CAR 127.07.3(4), on which a foreign air operator permit is issued, is contained in Annexure F.

127.07.7 RENEWAL OF PERMIT

1. Form of application

The form in which an application for the renewal of a foreign air operator permit must be made, is contained in Annexure E.

127.08.3 OPERATIONAL CONTROL AND SUPERVISION

1. Approval of method of supervision

The Director shall give due consideration to:

(1) Qualification for employment;
(2) Training/examination/licences;
(3) Licence and qualification validity;
(4) Competence of operations;
(5) Personnel;
(6) Supervisory staff;
(7) Control, analysis and storage of records;
(8) Flight documents and data;
(9) Documents used for the preparation and execution of the flight;
(10) Reports;
(11) Analysis and retention of documents and records;
(12) Quality control of EDP;
(13) Documents storage periods – flight crew records;
(14) Documents storage periods – cabin crew records;
(15) Flight time and duty period records (flight crew and cabin crew);
(16) Documents storage periods – records for other operations personnel;
(17) Flight recorder records; and
(18) Accident prevention and flight safety programme:

(a) Accident prevention;
(b) Human factors;
(c) Accident prevention organisation;
(d) Flight safety programme; and
(e) Main aspects of the flight safety programme.

127.08.11 AERODROME OPERATING NAMIBIA

1. Take-off minima

1.1 **General**

(1) Take-off minima established by the operator must be expressed as visibility or RVR limits, taking into account all relevant factors for each aerodrome planned to be used and the helicopter characteristics. Where there is a specific need to see and avoid obstacles on departure and/or for a forced landing, additional conditions (e.g. ceiling) must be specified.

(2) The pilot-in-command may not commence take-off unless the weather conditions at the aerodrome of departure are equal to or better than the applicable minima for landing at that aerodrome unless a suitable take-off alternate aerodrome is available.

(3) When the reported meteorological visibility is below that required for take-off and RVR is not reported, a take-off may only be commenced if the pilot-in-command can determine that the RVR/visibility is equal to or better than the required minimum.

(4) When no reported meteorological visibility or RVR is available, a take-off may only be commenced if the pilot-in-command can determine that the RVR/visibility is equal to or better than the required minimum.

1.2 **Visual reference**

(1) The take-off minima must be selected to ensure sufficient guidance to control the helicopter in the event of both a discontinued take-off in adverse circumstances and a continued take-off after failure of the critical power unit.

(2) For night operations ground lighting must be available to illuminate the FATO and any obstacles unless otherwise approved by the Director.

1.3 **Required RVR/Visibility**

(1) For Performance Class I operations, an operator must establish an RVR and visibility respectively (RVR/VIS) as take-off minima in accordance with the following table:

On-shore aerodrome with IFR departure procedures	**RVR/Visibility**
Nil facilities (day)	250 m or the rejected take-off distance whichever is the greater
Nil facilities (night)	800 m
Unit/unmarked defined runway/ FATO	200 m
Touch down zone edge/FATO lighting and centre line marking	200 m
Touch down zone edge/FATO lighting, centreline lighting and RVR information	150 m
Onshore aerodrome without IFR departure procedures	800 m

(2) For performance Class 2 operations, an operator must operate to take-off minima of 800 m RVR/VIS and remain clear of cloud during the take-off manoeuvre or until reaching Performance Class 1 capabilities.

(3) For Performance Class 3 operations an operator must operate to take-off minima of 600 ft cloud ceiling and 800 m RVR/VIS.

(4) Table 6 below, for converting reported meteorological visibility to RVR, must not be used for calculating take-off minima.

2. Non-precision approach

2.1 **System minima**

(1) An operator must ensure that system minima for non-precision approach procedures, which are based upon the use of ILS without glidepath (LLZ only), VOR, NDB, SRA and VDF are not lower than the MDH values given in Table 2 below.

Table 2 : System minima for non-precision approach aids

System minima	
Facility	**Lowest MDH**
ILS (no flide path - LLZ)	250 ft
SRA (terminating at 1/2 NM)	250 ft
SRA (terminating at 1NM)	300 ft
SRA (terminating at 2 NM)	350 ft
VOR	300 ft
VOR/DME	250 ft
NDB	300 ft
VDF (QDM and QGH)	300 ft

2.2 **Minimum descent height**

An operator must ensure that the minimum descent height for a non-precision approach is not lower than either -

(1) the OCH/OCL for the category of helicopter; or

(2) the system minimum.

2.3 **Visual reference**

A pilot may not continue an approach below MDA/H unless at least one of the following visual references for the intended touch down area is distinctly visible and identifiable to the pilot:

(1) Elements of the approach light system;

(2) the threshold;

(3) the threshold markings;

(4) the threshold lights;

(5) the threshold identification lights;

(6) the visual glide slope indicator;

(7) the touch down zone or touch down zone markings;

(8) the touch down zone lights;

(9) touch down zone edge lights; or

(10) other visual references accepted by the Director.

2.4 **Required RVR**

(1) For non-precision approaches by performance Class 1 and 2 helicopters, the minima given in the following table apply:

Table 3: Onshore non-precision approach minima

Onshore non-precision approach minima (4)(5)(6)			
MDH (ft)	**Facilities**		
	Full (1)	**Intermediate (2)**	**Basic (3)**
250 - 299	600	600	1 000
300 - 449	800	1 000	1 000
450 and above	1 000	1 000	1 000

Note: 1. Full facilities comprise touch down zone markings, 720 m or more of HI/MI approach lights, touch down zone edge lights, threshold lights and touch down zone end lights. Lights must be on.

2. Intermediate facilities comprise touch down zone markings, 420 - 719 m of HI/MI approach lights, touch down zone edge lights, threshold lights and touch down zone end lights. Lights must be on.

3. Basic facilities comprise touch down zone markings, < 420 m of HI/MI approach lights, any length of LI approach lights, touch down zone edge lights, threshold lights, touch down zone end lights or no lights at all.

4. The tables are only applicable to conventional approaches with a nominal descent slope of not greater than 4E. Greater descent slopes will usually require that visual glide slope guidance (e.g. PAPI) is also visible at the Minimum Descent Height.

5. The above figures are either reported RVR or meteorological visibility converted to RVR as in paragraph 7 below.

6. The MDH mentioned in Table 3 refers to the initial calculation of MDH. When selecting the associated RVR, there is no need to take account of a rounding up to the nearest ten feet, which may be done for operational purposes, e.g. conversion to MDA.

(2) Where the missed approach point is within _ NM of the landing threshold, the approach minima given for full facilities may be used regardless of the length of approach lighting available. However, touch down zone edge lights, threshold lights, end lights and touch down zone markings are still required.

(3) Night operations

For night operations ground lighting must be available to illuminate the FATO and any obstacles unless otherwise approved by the Director.

(4) Single-pilot operations

For single-pilot operations the minimum RVR is 800 m or the Table 3 minima whichever is higher.

3. Precision approach - Category I operations

3.1 **General**

A Category I operation is a precision instrument approach and landing using ILS, MLS or PAR with a decision height not lower than 200 ft and with a visibility not less than 500 m.

3.2 **Decision height**

An operator must ensure that the decision height to be used for a Category I precision approach is not lower than -

(1) the minimum decision height specified in the helicopter flight manual (HFM) if stated;

(2) the minimum height to which the precision approach aid can be used without the required visual reference;

(3) the OCH/OCL for the category of helicopter; or

(4) 200 ft.

3.3 **Visual reference**

A pilot may not continue an approach below the Category I decision height, determined in accordance with paragraph 3.2 above, unless at least one of the following visual references for the intended touchdown area is distinctly visible and identifiable to the pilot:

(1) Elements of the approach light system;

(2) the threshold;

(3) the threshold markings;

(4) the threshold lights;

(5) the threshold identification lights;

(6) the visual glide slope indicator;

(7) the touchdown zone or touchdown zone markings;

(8) the touchdown zone lights; or

(9) touchdown zone edge lights.

3.4 **Required RVR**

For Category I operations by Performance Class I and 2 helicopters the following minima applies:

Table 4 : Onshore precision approach minima - Category I

Onshore non-precision approach minima (Category I)			
MDH (ft)	**Facilities**		
	Full (1)	**Intermediate (2)**	**Basic (3)**
200	500	600	1 000
201 - 250	650	650	1 000
251 - 300	600	700	1 000
301 and above	750	800	1 000

Notes:1. Full facilities comprise touchdown zone markings, 720 m or more of HI/MI approach lights, touchdown zone edge lights, threshold lights and touchdown zone end lights. Lights must be on.

2. Intermediate facilities comprise touchdown zone markings, 420 - 719 m of HI/MI approach lights, touchdown zone edge lights, threshold lights and touchdown zone end lights. Lights must be on.

3. Basic facilities comprise touchdown zone markings, < 420 m of HI/MI approach lights, any length of LI approach lights, touchdown zone edge lights, threshold lights and touchdown zone end lights or no lights at all.

4. The above figures are either the reported RVR or meteorological visibility converted to RVR in accordance with paragraph 7.

5. The table is applicable to conventional approaches while a glide slope angle up to and including 4E.

6. The DH mentioned in Table 4 refers to the initial calculation of DH. When selecting the associated RVR, there is no need to take account of a rounding up to the nearest ten feet, which may be done for operational purposes, e.g. conversion to DA.

(1) Night operations

For night operations ground lighting must be available to illuminate the FATO and any obstacles unless otherwise approved by the Director.

(2) Single-pilot operations

For single-pilot operations, the operator must calculate the minimum RVR for all approaches. An RVR of less than 800 m is not permitted except when using a suitable autopilot coupled to an ILS or MLS, in which case normal minima apply. The decision height applied must not be less than 1.25 x the minimum disengagement height for the autopilot.

4. Onshore precision approach - Category II operations

4.1 **General**

A Category II operation is a precision instrument approach and landing using ILS or MLS with:

(1) A decision height below 200 ft but not lower than 100 ft; and

(2) a visibility of not less than 300 m.

4.2 **Decision height**

An operator must ensure that the decision height for a Category II operation is not lower than -

(1) the minimum decision height specified in the helicopter flight manual.

(2) the minimum height to which the precision approach aid can be used without the required visual reference;

(3) the OCH/OCL for the category of helicopter; or

(4) the decision height to which the flight crew is authorised to operate; or

(5) 100 ft.

4.3 **Visual reference**

A pilot may not continue an approach below the Category II decision height determined in accordance with paragraph 4.2 above, unless visual references containing a segment of at least 3 consecutive lights being the centre line of the approach lights, or touch down zone lights, or touch down zone edge lights, or a combination of these is attained and can be maintained. This visual reference must include a lateral element of the ground pattern, i.e. an approach lighting crossbar or the landing threshold or a barrette of the touch down zone lighting.

4.4 **Required RVR**

For Category II approaches by performance Class 1 helicopters the following minima apply:

Table 5 : RVR for Category II approach vs DH

Onshore non-precision approach minima - Category III	
Decision height	**Auto-coupled to below DH (1) RVR (m)**
100 - 120	300
121 - 140	400
141 and above*	450

Note: The reference to "auto-coupled to below DH" in this table means continued use of the automatic flight control system down to a height which is not greater than 80% of the applicable DH. Thus airworthiness requirements may, through minimum engagement height for the automatic flight control system, affect the DH to be applied.

5. Onshore circling

(1) Circling is the term used to describe the visual phase of an instrument approach, to bring a helicopter into position for landing on a touch down area which is not suitably located for a straight in approach.

(2) For circling the specified MDH may not be less than 250 ft, and the meteorological visibility may not be less than 800 m.

Note: Visual manoeuvring (circling) with prescribed tracks is an accepted procedure within the meaning of this paragraph.

6. Visual approach

An operator may not use an RVR of less than 800 m for a visual approach.

7. Conversion of reported meteorological visibility to RVR

(1) An operator must ensure that a meteorological visibility to RVR conversion is not used for calculating take-off minima, Category II or III minima or when a reported RVR is available.

(2) When converting meteorological visibility to RVR in all other circumstances than those in subparagraph (1) above, an operator must ensure that the following table is used:

Table 6 : Conversion of visibility to RVR

Lighting elements in operation	**RVR = Met. Visibility multiplied by**	
	Day	**Night**
HI approach and touch down	1.5	2.0
zone lighting		
Any type of lighting	1.0	1.5
No lighting	1.0	Not applicable

(a) Airborne radar approach (ARA) for over-water operations

General

(i) An operator may not conduct ARAs unless approved by the Director.

(ii) Airborne radar approaches are only permitted to rigs or vessels under way when a multi-crew concept is used.

(iii) A pilot-in-command may not undertake an airborne radar approach unless the radar can provide course guidance to ensure obstacle clearance.

(iv) Before commencing the final approach the pilot-in-command must ensure that a clear path exists on the radar screen for the final and missed approach segments. If lateral clearance from any obstacle will be less than 1.0 nm, the pilot-in-command must -

1. approach to a nearby target structure and thereafter proceed visually to the destination structure; or

2. make the approach from another direction leading to a circling manoeuvre.

(v) The pilot-in-command must ensure that the cloud ceiling is sufficiently clear above the helideck to permit a safe landing.

(b) Minimum descent height (MDH)

(i) The MDH is determined from a radio altimeter. The MDH for an airborne radar approach may not be lower than:

1. 200 ft by day;

2. 300 ft by night.

(ii) The MDH for an approach leading to a circling manoeuvre may not be lower than:

1. 300 ft by day;

2. 500 ft by night.

(c) Minimum descent altitude (MDA)

A MDA may only be used if the radio altimeter is unserviceable. The MDA may be a minimum of MDH + 200 ft and may be based on a calibrated barometer at the destination or on the lowest forecast QNH for the region.

(d) Decision range

The decision range may not be less than 0.75 nm unless an operator has demonstrated to the Director that a lesser decision range can be used at an acceptable level of safety.

(e) Visual reference

No pilot may continue an approach beyond decision range or below MDA/H unless he or she is visual with the destination.

(f) Single-pilot operations

The MDA/H for a single-pilot ARA must be 100 ft higher than that calculated using subparagraphs (b) and (c) above. The decision range may not be less than 1.0 nm.

127.08.14 MASS AND BALANCE

1. Definitions

Any word or expression to which a meaning has been assigned in the Aviation Act, 1962, and the Namibian Civil Aviation Regulations, 2001, bears, when used in this technical standard, the same meaning unless the context indicates otherwise, and -

"dry operating mass" means, for the purposes of this technical standard, the total mass of the helicopter ready for a specific type of operation excluding all usable fuel and traffic load;

"maximum take-off mass" means the maximum permissible total helicopter mass at take-off; and

"traffic load" means the total mass of passengers, baggage and cargo, including any non-revenue load.

2. Loading, mass and balance

The operator must specify, in the operations manual, the principles and methods involved in the loading and in the mass and balance system which comply with the provisions of CAR 135.08.14. This system must cover all types of intended operations.

3. Mass values for crew

(1) The operator or pilot-in-command must use the following mass values to determine the dry operating mass:

(a) Actual masses including any crew baggage; or

(b) standard masses, including hand baggage, of 85 kg for flight crew members and 75 kg for cabin crew members.

(2) The operator or pilot-in-command must correct the dry operating mass to account for any additional baggage. The position of this additional baggage must be accounted for when establishing the centre of gravity of the helicopter.

4. Mass values for passengers and baggage

(1) The operator or pilot-in-command must compute the mass of passengers and checked baggage using either the actual weighed mass of each person and the actual weighed mass of baggage or the standard mass values specified in Tables 1 to 3 below except where the number of passenger seats available is less than 6, when the passenger mass may be established by a verbal statement by or on behalf of each passenger or by estimation. The procedure specifying when to select actual or standard masses must be included in the operations manual.

(2) If determining the actual mass by weighing, the operator or pilot-in-command must ensure that passengers' personal belongings and hand baggage are included. Such weighing must be conducted immediately prior to boarding and at an adjacent location.

(3) If determining the mass of passengers using standard mass values, the standard mass values in Tables 1, 2 and 3 below must be used. The standard masses include hand baggage and the mass of any infant carried by an adult on one passenger seat. Infants occupying separate passenger seats are to be considered as children for the purpose of this paragraph.

(4) Where the total number of passenger seats available in a helicopter is 20 or more, the standard masses of male and female in Table 1 are applicable. As an alternative, in cases where the total number of passenger seats available is 30 or more, the 'All Adult' mass values in Table 1 are applicable.

Table 1

Passenger seats	**20 and more**		**30 and more**
	Male	**Female**	**All adult**
All flights	82 kg	64 kg	78 kg
Children	35 kg	35 kg	35 kg
Hand baggage (where applicable)			
Survival suit (where applicable)		6 kg	

(5) Where the total number of passenger seats available in a helicopter is 10 - 19 inclusive, the standard masses in Table 2 are applicable.

Table 2

Passenger seats	**10 - 19**	
	Male	**Female**
All flights	86 kg	68 kg
Children	35 kg	35 kg
Hand baggage (where applicable)	6 kg	
Survival suit (where applicable)	3 kg	

(6) Where the number of passenger seats available is 1 - 5 inclusive or 6 - 9 inclusive, the standard masses in Table 3 are applicable.

Table 3

Passenger seats	**1-5**	**6-9**
Male	98 kg	90 kg
Female	80 kg	72 kg
Children	35 kg	35 kg
Hand baggage (where applicable)	6 kg	
Survival suit (where applicable)	3 kg	

(7) Where the total number of passenger seats available in the helicopter is 20 or more, the standard mass value for each piece of checked baggage is 13 kg. For helicopters with 19 passenger seats or less the actual mass of checked baggage, determined by weighing, must be used.

(8) If the operator or pilot-in-command wishes to use standard mass values other than those contained in Tables 1 to 3 above, he or she must advise the Director of his or her reasons and gain such approval in advance. After verification and approval by the Director of the results of the weighing survey, the revised standard mass values are only applicable to that operator. The revised standard mass values can only be used in circumstances consistent with those under which the survey was conducted. Where revised standard masses exceed those in Tables 1 to 3, then such higher values must be used.

(9) On any flight identified as carrying a significant number of passengers whose masses, including hand baggage, are expected to exceed the standard passenger mass, the operator or pilot-in-command must determine the actual mass of such passengers by weighing or by adding an adequate mass increment.

(10) If standard mass values for checked baggage are used and a significant number of passengers check-in baggage that is expected to exceed the standard baggage mass, the operator or pilot-in-command must determine the actual mass of such baggage by weighing or by adding an adequate mass increment.

(11) The operator must ensure that a pilot-in-command is advised when a non-standard method has been used for determining the mass of the load and that this method is stated in the mass and balance documentation.

5. Mass and balance documentation

5.1 **General**

(1) The operator must establish mass and balance documentation prior to each flight specifying the load and its distribution.

The mass and balance documentation must enable the pilot-in-command to determine by inspection that the load and its distribution is such that the mass and balance limits of the helicopter are not exceeded.

The person supervising the loading of the helicopter must confirm by signature that the load and its distribution are in accordance with the mass and balance documentation.

Acceptance of the loading of the helicopter by the pilot-in-command, must be indicated by countersignature or equivalent.

(2) The mass and balance documentation must contain the following information:

(a) The helicopter registration and type;

(b) the flight identification number and date;

(c) the identity of the pilot-in-command;

(d) the identity of the person who prepared the document;

(e) the dry operating mass and the corresponding centre of gravity of the helicopter;

(f) the mass of the fuel at take-off and the mass of trip fuel;

(g) the mass of consumables other than fuel;

(h) the components of the load including passengers, baggage, cargo and ballast;

(i) the take-off mass, landing mass and zero fuel mass;

(j) the load distribution;

(k) the applicable helicopter centre of gravity positions; and

(l) the limiting mass and centre of gravity values.

5.2 **Last minute change**

(1) The operator must specify procedures for last minute changes to the load.

(2) If any last minute change occurs after the completion of the mass and balance documentation, this must be brought to the attention of the pilot-in-command and the last minute change must be entered on the mass and balance documentation.

The maximum allowed change in the number of passengers or hold load acceptable as a last minute change, must be specified in the operations manual.

If this number is exceeded, new mass and balance documentation must be prepared.

5.3 **Computerised systems**

(1) Where mass and balance documentation is generated by a computerised mass and balance system, the operator must verify the integrity of the output data.

(2) The operator must establish a system to check that amendments of the input data are incorporated properly in the system and that the system is operating correctly on a continuous basis by verifying the output data at intervals not exceeding six months.

5.4 **Onboard mass and balance systems**

The operator must obtain the approval of the Director if the operator wishes to use an onboard mass and balance computer system as a primary source of despatch.

5.5 **Datalink**

When mass and balance documentation is sent to helicopters via datalink, a copy of the final mass and balance documentation as accepted by the pilot-in-command, must be available on the ground.

127.08.16 FUEL POLICY

1. Contingency fuel

At the planning stage, not all factors which could have an influence on the fuel consumption to the destination aerodrome can be foreseen. Therefore, contingency fuel is carried to compensate for items such as -

(1) deviations of an individual helicopter from the expected fuel consumption data;

(2) deviations from forecast meteorological conditions; and

(3) deviations from planned routings and/or cruising levels/altitudes.

127.08.20 NOISE ABATEMENT PROCEDURES

1. Procedures

Aeroplane operating procedures for noise abatement must comply with the provisions of PANS-OPS (Doc 8168), Volume I, Part V, published by ICAO.

127.08.28 COMMENCEMENT AND CONTINUATION OF APPROACH

1. Conversion of reported visibility

(1) The pilot-in-command must ensure that a meteorological visibility to RVR conversion is not used for calculating take-off minima, Category II or III minima or when a reported RVR is available.

(2) When converting meteorological visibility to RVR in circumstances other than those in subparagraph (1) above, the pilot-in-command must ensure that the following table is used:

Conversion of visibility to RVR

Passenger seats	RVR = Reported Met. Visibility multiplied by	
	Day	**Night**
HI approach and runway/ touchdown and lift-off area lighting	1.5	2
Any type of lighting installation other than above	1	1.5
No lighting	1	Not applicable

127.08.35 CARRY-ON BAGGAGE

1. Procedures for stowing of carry-on baggage

Procedures established by an operator to ensure that carry-on baggage is adequately and securely stowed, must take account of the following:

(1) Each item carried in a cabin must be stowed only in a location that is capable of restraining it;

(2) mass limitations placarded on or adjacent to stowages must not be exceeded;

(3) underseat stowages must not be used unless the seat is equipped with a restraint bar and the baggage is of such size that it may adequately be restrained by this equipment;

(4) items must not be stowed in toilets or against bulkheads that are incapable of restraining articles against movement forwards, sideways or upwards and unless the bulkheads carry a placard specifying the greatest mass that may be placed there;

(5) baggage and cargo placed in lockers must not be of such size that they prevent latched doors from being closed securely;

(6) baggage and cargo must not be placed where it can impede access to emergency equipment; and

(7) checks must be made before take-off, before landing, and whenever the pilot-in-command illuminates the fasten seat belts sign (or otherwise so orders) to ensure that baggage is stowed where it cannot impede evacuation from the helicopter or cause injury by failing (or other movement) as may be appropriate to the phase of flight.

127.09.1 HELICOPTER PERFORMANCE CLASSIFICATION

(Reserved.)

127.10.6 OPERATOR'S MAINTENANCE MANAGEMENT MANUAL

1. Information to be contained in the manual

The operator's maintenance management manual must contain details of the organisation structure, including:

(1) the competent person responsible for the maintenance system;

(2) the personnel responsible for planning, performing, supervising and inspecting all maintenance to ensure -

(a) that such maintenance is carried out on time to an approved standard so that the maintenance responsibility referred to in CAR 127.10.3 is satisfied; and

(b) the functioning of the quality assurance system referred to in CAR 127.06.2; and

(3) the procedures to be followed to satisfy such maintenance responsibility and quality assurance functions.

127.11.8 LIGHTS TO BE DISPLAYED BY HELICOPTER

1. Aircraft

At night all aircraft in flight or operating on the manoeuvring area of an aerodrome must display the lights prescribed in paragraph 2, unless otherwise instructed by the Director or by an air traffic service unit: Provided that such aircraft must display no other lights if these are likely to be mistaken for the lights prescribed in paragraph 2.

2. Aeroplane operating lights

2.1 **Definitions**

Any word or expression to which a meaning has been assigned in the Aviation Act, 1962, and the Civil Aviation Regulations, 2001, bears, when used in this technical standard, the same meaning unless the context indicates otherwise, and -

Aangles of "coverage" means -

(1) Angle of coverage A is formed by two intersecting vertical planes making angles of 70 degrees to the right and 70 degrees to the left respectively, looking aft along the longitudinal axis to a vertical plane passing through the longitudinal axis.

(2) Angle of coverage F is formed by two intersecting vertical planes making angles of 110 degrees to the right and 110 degrees to the left respectively, looking forward along the longitudinal axis to a vertical plane passing through the longitudinal axis.

(3) Angle of coverage L is formed by two intersecting vertical planes one parallel to the longitudinal axis of the aeroplane, and the other 110 degrees to the right of the first, when looking forward along the longitudinal axis.

(4) Angle of coverage R is formed by two intersecting vertical planes one parallel to the longitudinal axis of the aeroplane, and the other 110 degrees to the right of the first, when looking forward along the longitudinal axis;

"horizontal plane" means the plane containing the longitudinal axis and perpendicular to the plane of symmetry of the aeroplane;

"longitudinal axis of the aeroplane" means a selected axis parallel to the direction of flight at a normal cruising speed, and passing through the centre of gravity of the aeroplane;

"making way" means that an aeroplane on the surface of the water is under way and has a velocity relative to the water;

"under command" means that an aeroplane on the surface of the water is able to execute manoeuvres as required by the International Regulations for Preventing Collisions at Sea for the purpose of avoiding other vessels;

"under way" means that an aeroplane on the surface of the water is not aground or moored to the ground or to any fixed object on the land or in the water;

"vertical planes" means planes perpendicular to the horizontal plane; and

"visible" means visible on a dark night with a clear atmosphere.

Lights to be displayed in the air

As illustrated in Figure 1, the following unobstructed navigation lights must be displayed:

(1) A red light projected above and below the plane through angle of coverage L;

(2) a green light projected above and below the horizontal plane through angle of coverage R;

(3) a white light projected above and below the horizontal plane rearward through angle of coverage A.

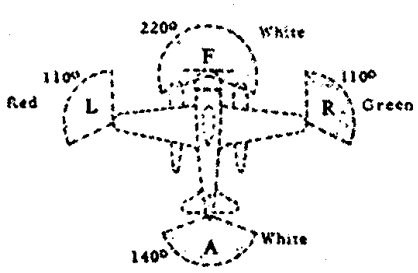


Figure 1

2.3 **Lights to be displayed on the water**

(1) General

(a) The International Regulations for Preventing Collisions at Sea require different lights to be displayed in each of the following circumstances:

(i) When under way;

(ii) when towing another vessel or aeroplane;

(iii) when being towed;

(iv) when not under command and not making way;

(v) when making way but not under command;

(vi) when at anchor;

(vii) when aground.

(b) The lights required by aeroplanes in each case are described below.

(2) When under way

(a) As illustrated in Figure 2, the following appearing as steady unobstructed lights:

(i) A red light projected above and below the plane through angle of coverage L;

(ii) a green light projected above and below the horizontal plane through angle of coverage R;

(iii) a white light projected above and below the horizontal plane rearward through angle of coverage A; and

(iv) a white light projected through angle of coverage F.

(b) The lights described in the first three items should be visible at a distance of at least 3.7 km (2 nm). The light described in the fourth item should be visible at a distance of 9.3 km (5 nm) when fitted to an aeroplane of 20 m or more in length or visible at a distance of 5.6 km (3 nm) when fitted to an aeroplane of less than 20 m in length.

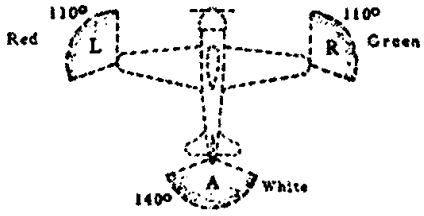


Figure 2

(3) When towing another vessel or aeroplane

As illustrated in Figure 3, the following appearing as steady, unobstructed lights:

(a) the lights described in subparagraph (2);

(b) a second light having the same characteristics as the light described in the fourth item of subparagraph (2) and mounted in a vertical line at least 2 m above or below it; and

(c) a yellow light having otherwise the same characteristics as the light described in the third item of subparagraph (2) and mounted in a vertical line at least 2 m above it.

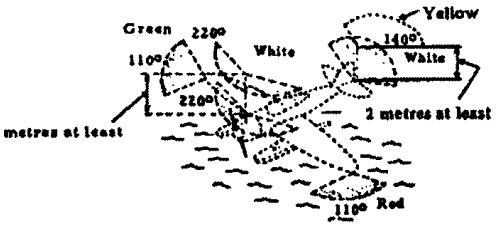


Figure 3

(4) When being towed

The lights described in the first three items of subparagraph (2) appearing as steady unobstructed lights.

(5) When not under command and not making way

As illustrated in Figure 4, two steady red lights placed where they can best be seen, one vertically over the other and not less than 1 m apart, and of such a character as to be visible all around the horizon at a distance of at least 3,7 km (2 nm).

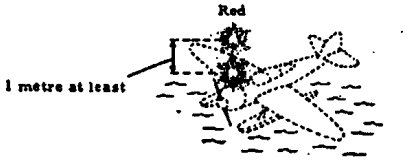


Figure 4

(6) When making way but not under command

As illustrated in Figure 5, the lights described in subparagraph (5) and the first three items of subparagraph (2).

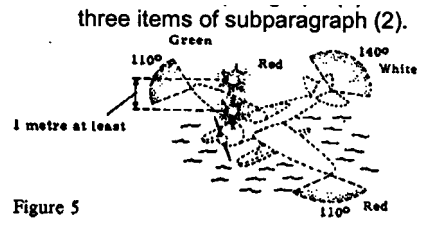


Figure 5

Note: The display of lights prescribed in subparagraphs (5) and (6) above is to be taken by other aircraft as signals that the aeroplane showing them is not under command cannot therefore get out of the way. They dare not signals of aeroplanes in distress and requiring assistance.

(7) When at anchor

(a) If less than 50 m in length, where it can best be seen, a steady white light (Figure 6), visible all around the horizon at a distance of at least 3.7 km (2 nm).

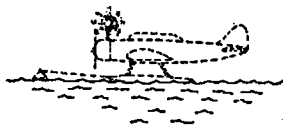


Figure 6

(b) If 50 m or more in length, where they can best be seen, a steady white forward light and a steady white rear light (Figure 7) both visible all around the horizon at a distance of at least 5.6 km (3 nm).

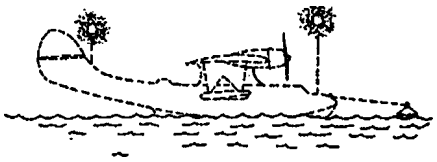
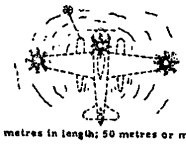


Figure 7

(c) If 50 m or more in span a steady white light on each side (Figures 8 and 9) to indicate the maximum span and visible, so far as practicable, all around the horizon at a distance of at least 1.9 km (1 nm).



Less than 50 metres in length; 50 metres or more in span
Figure 8

50 metres or more in length; 50 metres or more in span
Figure 9

(8) When aground

The lights prescribed in paragraph (7) and in addition two steady red lights in vertical line, at least 1 m apart so placed as to be visible all around the horizon.

127.11.10 SIGNALS

1. Distress signals

(1) The following signals, used either together or separately, mean that grave and imminent danger threatens, and immediate assistance is requested:

(a) A signal made by radiotelegraphy or by any other signalling method consisting of the group SOS (. . . _ _ _ . . . in the Morse Code);

(b) a signal sent by radiotelephony consisting of the spoken word MAYDAY;

(c) rockets or shells throwing red lights, fired one at a time at short intervals;

(d) a parachute flare showing a red light.

(2) Alarm signals for actuating radiotelegraph and radiotelephone auto-alarm systems:

(3) The radiotelegraph alarm signal consists of a series of twelve dashes sent in one minute, the duration of each dash being four seconds and the duration of the interval between consecutive dashes one second. It may be transmitted by hand but its transmission by means of an automatic instrument is recommended.

(4) The radiotelephone alarm signal consists of two substantially sinusoidal audio frequency tones transmitted alternately. One tone has a frequency of 2 200 Hz and the other a frequency of 1 300 Hz, the duration of each tone being 250 milliseconds.

(5) The radiotelephone alarm signal, when generated by automatic means, must be sent continuously for a period of at least thirty seconds but not exceeding one minute; when generated by other means, the signal must be sent as continuously as practicable over a period of approximately one minute.

(6) None of the provisions in this paragraph prevent the use, by an aircraft in distress, of any means at its disposal to attract attention, make known its position and obtain help.

2. Urgency signals

(1) The following signals, used either together or separately, mean that an aircraft wishes to give notice of difficulties which compel it to land without requiring immediate assistance:

(a) The repeated switching on and off of the landing lights; or

(b) the repeated switching on and off of the navigation lights in such manner as to be distinct from flashing navigation lights.

(2) The following signals, used either together or separately, mean that an aircraft has a very urgent message to transmit concerning the safety of a ship, aircraft or other vehicle, or of some person on board or within sight:

(a) A signal made by radiotelegraphy or by any other signalling method consisting of the group XXX;

(b) a signal sent by radiotelephony consisting of the spoken words PAN, PAN.

(3) None of the provisions in this paragraph prevent the use, by an aircraft in distress, of any means at its disposal to attract attention, make known its position and obtain help.

3. Visual signals used to warn an unauthorised aircraft flying in, or about to enter a restricted, prohibited or danger area

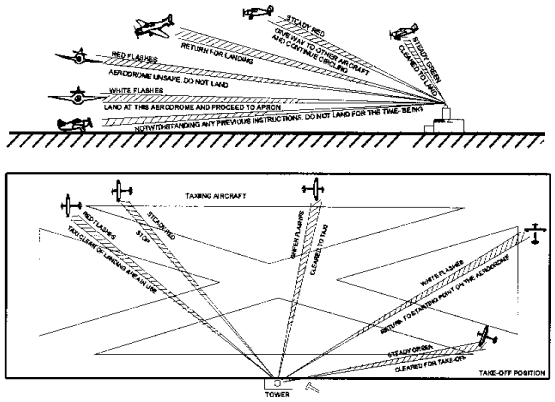
By day and by night, a series of projectiles discharged from the ground at intervals of 10 seconds, each showing, on bursting, red and green lights or stars will indicate to an unauthorised aircraft that it is flying in or about to enter a restricted, prohibited or danger area, and that the aircraft is to take such remedial action as may be necessary.

4. Signals for aerodrome traffic

(1) Light and pyrotechnic signals

(a) Instructions

Light		**From aerodrome control to**	
		Aircraft in flight	**Aircraft on the ground**
Directed towards aircraft concerned (see Figure 1.1)	Steady green	Cleared to land	Cleared for take-off
	Steady red	Give way	Stop
	Series of green flashes	Return for landing*	Cleared to taxi
	Series of red flashes	Aerodrome at this acrodrome and proceed to apron*	Taxi clear of landing area in use
	Series of white flashes	Notwithstanding any previous instructions, do not land for the time being	Return to starting point on the aerodrome
	Steady red on final approach		
* Clearance to land and to taxi will be given in due course.			



(a) Acknowledgement by aircrafft

(i) When in flight:

1. During the hours of daylight:

by rocking the aircraft's wings;

Note: This signal should not be expected on the base and final legs of the approach

2. during the hours of darkness:

by flashing on and off twice the aircraft's landing lights, or if not so equipped, by switching on and off twice its navigation lights;

(ii) when on the ground:

1. During the hours of daylight:

by moving the aircraft's ailerons or rudder;

2. during the hours of darkness:

by flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.

(2) Visual ground signals

(a) Prohibition of landing

A horizontal red square panel with yellow diagonals (Figure 1.2) when displayed in a signal area indicates that landings are prohibited and that the prohibition is liable to be prolonged.

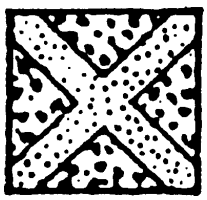


Figure 1.2

(b) Need for special precautions while approaching or landing

A horizontal red square panel with one yellow diagonal (Figure 1.3) when displayed in a signal area indicates that owing to the bad state of the manoeuvring area, or for any other reason, special precautions must be observed in approaching to land or in landing.

Figure 1.3

(c) Use of runways and taxiways

1. A horizontal white dumb-bell (Figure 1.4) when displayed in a signal area indicates that aircraft are required to land, take off and taxi on runways and taxiways only.

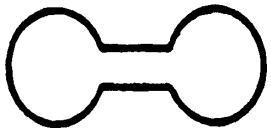


Figure 1.4

2. The same horizontal white dumb-bell as in Figure 1.4 but with a black bar placed perpendicular to the shaft across each circular portion of the dumb-bell (Figure 1.5) when displayed in a signal area indicates that aircraft are required to land and take off on runways only, but other manoeuvres need not be confined to runways and taxiways.

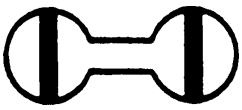


Figure 1.5

(d) Closed runways or taxiways

Crosses of a single contrasting colour, yellow or white (Figure 1.6), displayed horizontally on runways and taxiways or parts thereof indicate an area unfit for movement of aircraft

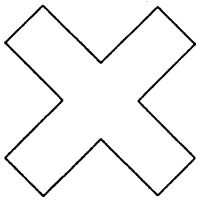


Figure 1.6

(e) Directions for landing or take-off

1. A horizontal white or orange landing T (Figure 1.7) indicates the direction to be used by aircraft for landing and take-off, which must be in a direction parallel to the shaft of the T towards the cross arm.

Note: When used at night, the landing T is either illuminated or outlined in white coloured lights

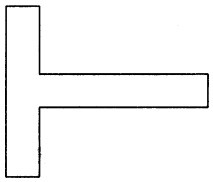


Figure 1.7

X A set of two digits (Figure 1.8) displayed vertically at or near the aerodrome control tower indicates to aircraft on the manoeuvring area the direction for take-off, expressed in units of 10 degrees to the nearest 10 degrees of the magnetic compass.

Figure 1.8

(f) Right-hand traffic

When displayed in a signal area, or horizontally at the end of the runway or strip in use, a right-hand arrow of conspicuous colour (Figure 1.9) indicates that turns are to be made to the right before landing and after take-off.

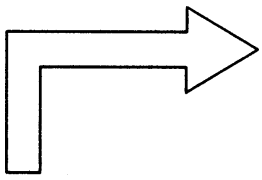


Figure 1.9

(g) Air traffic services reporting office

The letter C displayed vertically in black against a yellow background (Figure 1.10) indicates the location of the air traffic services reporting office.

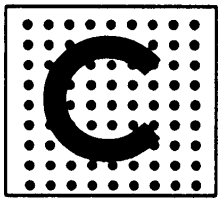


Figure 1.10

(h) Glider flights in operation

A double white cross displayed horizontally (Figure 1.11) in the signal area indicates that the aerodrome is being used by gliders and that glider flights are being performed.

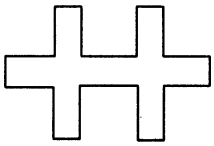


Figure 1.11

(i) Agricultural flights in operation

A figure A (figure 1.12) in the signal area indicates that the aerodrome is being used for agricultural flights.

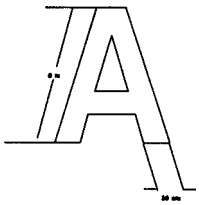


Figure 1.12

5. Marshalling signals

(i) From a signalman to an aircraft

Prior to using the following signals, the signalman must ascertain that the area within which an aircraft to be guided is clear of objects which the aircraft, in complying with this technical standard, might otherwise strike.

Note: The design of many aircraft is such that the path of the wing tips, engines and other extremities cannot always be monitored visually from the flight deck while the aircraft is being manoeuvred on the ground.