

ANNEX VII

Non-Commercial Air Operations with Other-Than Complex Motor-Powered Aircraft [PART-NCO]

SUBPART A: GENERAL REQUIREMENTS

NCO.GEN.100 Competent authority

- (a) The competent authority shall be the authority designated by the Member State where the aircraft is registered.
- (b) If the aircraft is registered in a third country, the competent authority shall be the authority designated by the Member State where the operator is established or residing.

NCO.GEN.101 Means of compliance

Alternative means of compliance to those adopted by the Agency may be used by an operator to establish compliance with Regulation (EC) No 216/2008 and its Implementing Rules.

NCO.GEN.102 Touring motor gliders, powered sailplanes and mixed balloons

- (a) Touring motor gliders shall be operated following the requirements for:
 - (1) aeroplanes when they are power-driven by an engine; and
 - (2) sailplanes when operated without using an engine.
- (b) Touring motor gliders shall be equipped in compliance with the requirements applicable to aeroplanes unless otherwise specified in Subpart D.
- (c) Powered sailplanes, excluding touring motor gliders, shall be operated and equipped in compliance with the requirements applicable to sailplanes.
- (d) Mixed balloons shall be operated in accordance with the requirements for hot-air balloons.

NCO.GEN.103 Introductory flights

Introductory flights referred to in Article 6(5)(c) of this Regulation when conducted in accordance with this Annex, shall:

- (a) start and end at the same aerodrome or operating site, except for balloons and sailplanes;
- (b) be operated under VFR by day;
- (c) be overseen by a nominated person responsible for their safety; and
- (d) comply with any other conditions stipulated by the competent authority.

NCO.GEN.105 Pilot-in-command responsibilities and authority

- (a) The pilot-in-command shall be responsible for:
- (1) the safety of the aircraft and of all crew members, passengers and cargo on board during aircraft operations as referred to in 1.c of Annex IV to Regulation (EC) No 216/2008;
 - (2) the initiation, continuation, termination or diversion of a flight in the interest of safety;
 - (3) ensuring that all operational procedures and checklists are complied with as referred to in 1.b of Annex IV to Regulation (EC) No 216/2008;
 - (4) only commencing a flight if he/she is satisfied that all operational limitations referred to in 2.a.3 of Annex IV to Regulation (EC) No 216/2008 are complied with, as follows:
 - (i) the aircraft is airworthy;
 - (ii) the aircraft is duly registered;
 - (iii) instruments and equipment required for the execution of that flight are installed in the aircraft and are operative, unless operation with inoperative equipment is permitted by the minimum equipment list (MEL) or equivalent document, if applicable, as provided for in NCO.IDE.A.105, NCO.IDE.H.105, NCO.IDE.S.105 or NCO.IDE.B.105;
 - (iv) the mass of the aircraft and, except in the case of balloons, the centre of gravity location are such that the flight can be conducted within limits prescribed in the airworthiness documentation;
 - (v) all equipment, baggage and cargo are properly loaded and secured and an emergency evacuation remains possible; and
 - (vi) the aircraft operating limitations as specified in the aircraft flight manual (AFM) will not be exceeded at any time during the flight;
 - (5) not commencing a flight if he/she is incapacitated from performing duties by any cause such as injury, sickness, fatigue or the effects of any psychoactive substance;
 - (6) not continuing a flight beyond the nearest weather-permissible aerodrome or operating site when his/her capacity to perform duties is significantly reduced from causes such as fatigue, sickness or lack of oxygen;
 - (7) deciding on acceptance of the aircraft with unserviceabilities in accordance with the configuration deviation list (CDL) or minimum equipment list (MEL), as applicable; and
 - (8) recording utilisation data and all known or suspected defects in the aircraft at the termination of the flight, or series of flights, in the aircraft technical log or journey log for the aircraft.
- (b) The pilot-in-command shall ensure that during critical phases of flight or whenever deemed necessary in the interest of safety, all crew members are seated at their assigned stations and do not perform any activities other than those required for the safe operation of the aircraft.
- (c) The pilot-in-command shall have the authority to refuse carriage of or disembark any person, baggage or cargo that may represent a potential hazard to the safety of the aircraft or its occupants.
- (d) The pilot-in-command shall, as soon as possible, report to the appropriate air traffic services (ATS) unit any hazardous weather or flight conditions encountered that are likely to affect the safety of other aircraft.

- (e) The pilot-in-command shall, in an emergency situation that requires immediate decision and action, take any action he/she considers necessary under the circumstances in accordance with 7.d of Annex IV to Regulation (EC) No 216/2008. In such cases he/she may deviate from rules, operational procedures and methods in the interest of safety.
- (f) During flight, the pilot-in-command shall:
 - (1) except for balloons, keep his/her safety belt fastened while at his/her station; and
 - (2) remain at the controls of the aircraft at all times except if another pilot is taking the controls.
- (g) The pilot-in-command shall submit a report of an act of unlawful interference without delay to the competent authority and shall inform the designated local authority.
- (h) The pilot-in-command shall notify the nearest appropriate authority by the quickest available means of any accident involving the aircraft that results in serious injury or death of any person or substantial damage to the aircraft or property.

GM1 NCO.GEN.105 Pilot-in-command responsibilities and authority

GENERAL

In accordance with 1.c. of Annex IV to Regulation (EC) No 216/2008¹ (essential requirements for air operations), the pilot-in-command is responsible for the operation and safety of the aircraft and for the safety of all passengers and cargo on board. This includes the following:

- (a) the safety of all passengers and cargo on board, as soon as he/she arrives on board, until he/she leaves the aircraft at the end of the flight; and
- (b) the operation and safety of the aircraft:
 - (1) for aeroplanes, from the moment it is first ready to move for the purpose of flight until the moment it comes to rest at the end of the flight and the engine(s) used as primary propulsion unit(s) is/are shut down;
 - (2) for helicopters, from the moment the engine(s) are started until the helicopter comes to rest at the end of the flight with the engine(s) shut down and the rotor blades stopped;
 - (3) for sailplanes, from the moment the launch procedure is started until the aircraft comes to rest at the end of the flight; or
 - (4) for balloons, from the moment the inflating of the envelope is started until the envelope is deflated.

GM1 NCO.GEN.105(a)(8) Pilot-in-command responsibilities and authority

RECORDING UTILISATION DATA

Where an aircraft conducts a series of flights of short duration — such as a helicopter doing a series of lifts — and the aircraft is operated by the same pilot-in-command, the utilisation data for the series of flights may be recorded in the aircraft technical log or journey log as a single entry.

¹ Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC. *OJ L 79, 19.3.2008, p. 1*, as amended by Regulation (EC) No 1108/2009 of the European Parliament and of the Council of 21 October 2009, *OJ L 309, 24.11.2009, p. 51*.

AMC1 NCO.GEN.105(c) Pilot-in-command responsibilities and authority

CHECKLISTS

- (a) The pilot-in-command should use the latest checklists provided by the manufacturer.
- (b) If checks conducted prior to take-off are suspended at any point, the pilot-in-command should re-start them from a safe point prior to the interruption.

GM1 NCO.GEN.105(d) Pilot-in-command responsibilities and authority

REPORTING OF HAZARDOUS FLIGHT CONDITIONS

- (a) These reports should include any detail which may be pertinent to the safety of other aircraft.
- (b) Such reports should be made whenever any of the following conditions are encountered or observed:
 - (1) severe turbulence;
 - (2) severe icing;
 - (3) severe mountain wave;
 - (4) thunderstorms, with or without hail, that are obscured, embedded, widespread or in squall lines;
 - (5) heavy dust storm or heavy sandstorm;
 - (6) volcanic ash cloud; and
 - (7) unusual and/or increasing volcanic activity or a volcanic eruption.
- (c) When other meteorological conditions not listed above, e.g. wind shear, are encountered that, in the opinion of the pilot-in-command, may affect the safety or the efficiency of other aircraft operations, the pilot-in-command should advise the appropriate air traffic services (ATS) unit as soon as practicable.

AMC1 NCO.GEN.105(e) Pilot-in-command responsibilities and authority

VIOLATION REPORTING

If required by the State in which the incident occurs, the pilot-in-command should submit a report on any such violation to the appropriate authority of such State; in that event, the pilot-in-command should also submit a copy of it to the competent authority. Such reports should be submitted as soon as possible and normally within 10 days.

NCO.GEN.106 Pilot-in-command responsibilities and authority — balloons

The pilot-in-command of a balloon shall in addition to NCO.GEN.105:

- (a) be responsible for the pre-flight briefing of those persons assisting in the inflation and deflation of the envelope;
- (b) ensure that no person is smoking on board or within the direct vicinity of the balloon; and
- (c) ensure that persons assisting in the inflation and deflation of the envelope wear appropriate protective clothing.

GM1 NCO.GEN.106(b) Pilot-in-command responsibilities and authority — balloons**PROTECTIVE CLOTHING**

Protective clothing includes:

- (a) long sleeves and trousers preferably made out of natural fibres;
- (b) stout footwear; and
- (c) gloves.

NCO.GEN.110 Compliance with laws, regulations and procedure

- (a) The pilot-in-command shall comply with the laws, regulations and procedures of those States where operations are conducted.
- (b) The pilot-in-command shall be familiar with the laws, regulations and procedures, pertinent to the performance of his/her duties, prescribed for the areas to be traversed, the aerodromes or operating sites to be used and the related air navigation facilities as referred to in 1.a of Annex IV to Regulation (EC) No 216/2008.

NCO.GEN.115 Taxiing of aeroplanes

An aeroplane shall only be taxied on the movement area of an aerodrome if the person at the controls:

- (a) is an appropriately qualified pilot; or
- (b) has been designated by the operator and:
 - (1) is trained to taxi the aeroplane;
 - (2) is trained to use the radio telephone, if radio communications are required;
 - (3) has received instruction in respect of aerodrome layout, routes, signs, marking, lights, air traffic control (ATC) signals and instructions, phraseology and procedures; and
 - (4) is able to conform to the operational standards required for safe aeroplane movement at the aerodrome.

GM1 NCO.GEN.115 Taxiing of aeroplanes**SAFETY-CRITICAL ACTIVITY**

- (a) Taxiing should be treated as a safety-critical activity due to the risks related to the movement of the aeroplane and the potential for a catastrophic event on the ground.
- (b) Taxiing is a high-workload phase of flight that requires the full attention of the pilot-in-command.

GM1 NCO.GEN.115(b)(4) Taxiing of aeroplanes**SKILLS AND KNOWLEDGE**

The person designated by the operator to taxi an aeroplane should possess the following skills and knowledge:

- (a) positioning of the aeroplane to ensure safety when starting engine;
- (b) getting ATIS reports and taxi clearance, where applicable;
- (c) interpretation of airfield markings/lights/signals/indicators;
- (d) interpretation of marshalling signals, where applicable;
- (e) identification of suitable parking area;
- (f) maintaining lookout and right-of-way rules and complying with ATC or marshalling instructions when applicable;
- (g) avoidance of adverse effect of propeller slipstream or jet wash on other aeroplanes, aerodrome facilities and personnel;

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- (h) inspection of taxi path when surface conditions are obscured;
 - (i) communication with others when controlling an aeroplane on the ground;
 - (j) interpretation of operational instructions;
 - (k) reporting of any problem that may occur while taxiing an aeroplane; and
 - (l) adapting the taxi speed in accordance with prevailing aerodrome, traffic, surface and weather conditions.

NCO.GEN.120 Rotor engagement — helicopters

A helicopter rotor shall only be turned under power for the purpose of flight with a qualified pilot at the controls.

GM1 NCO.GEN.120 Rotor engagement

INTENT OF THE RULE

- (a) The following two situations where it is allowed to turn the rotor under power should be distinguished:
 - (1) for the purpose of flight, this is described in the implementing rule;
 - (2) for maintenance purposes.
- (b) Rotor engagement for the purpose of flight: it should be noted that the pilot should not leave the control when the rotors are turning. For example, the pilot is not allowed to get out of the aircraft in order to welcome passengers and adjust their seat belts with the rotors turning.
- (c) Rotor engagement for the purpose of maintenance: the implementing rule, however, should not prevent ground runs being conducted by qualified personnel other than pilots for maintenance purposes.

The following conditions should be applied:

- (1) The operator should ensure that the qualification of personnel, other than pilots, who are authorised to conduct maintenance runs is described in the appropriate manual.
- (2) Ground runs should not include taxiing the helicopter.
- (3) There should be no passengers on board.
- (4) Maintenance runs should not include collective increase or auto pilot engagement (risk of ground resonance).

NCO.GEN.125 Portable electronic devices

The pilot-in-command shall not permit any person to use a portable electronic device (PED) on board an aircraft that could adversely affect the performance of the aircraft's systems and equipment.

GM1 NCO.GEN.125 Portable electronic devices**DEFINITIONS****(a) Definition and categories of PEDs**

PEDs are any kind of electronic device, typically but not limited to consumer electronics, brought on board the aircraft by crew members, passengers, or as part of the cargo and that are not included in the approved aircraft configuration. All equipment that is able to consume electrical energy falls under this definition. The electrical energy can be provided from internal sources as batteries (chargeable or non-rechargeable) or the devices may also be connected to specific aircraft power sources.

PEDs include the following two categories:

- (1) Non-intentional transmitters can non-intentionally radiate RF transmissions, sometimes referred to as spurious emissions. This category includes, but is not limited to, calculators, cameras, radio receivers, audio and video players, electronic games and toys; when these devices are not equipped with a transmitting function.
- (2) Intentional transmitters radiate RF transmissions on specific frequencies as part of their intended function. In addition, they may radiate non-intentional transmissions like any PED. The term 'transmitting PED' (T-PED) is used to identify the transmitting capability of the PED. Intentional transmitters are transmitting devices such as RF-based remote control equipment, which may include some toys, two-way radios (sometimes referred to as private mobile radio), mobile phones of any type, satellite phones, computers with mobile phone data connection, wireless local area network (WLAN) or Bluetooth capability. After deactivation of the transmitting capability, e.g. by activating the so-called 'flight mode' or 'flight safety mode', the T-PED remains a PED having non-intentional emissions.

(b) Definition of the switched-off status

Many PEDs are not completely disconnected from the internal power source when switched off. The switching function may leave some remaining functionality e.g. data storage, timer, clock, etc. These devices can be considered switched off when in the deactivated status. The same applies for devices having no transmitting capability and are operated by coin cells without further deactivation capability, e.g. wrist watches.

GM2 NCO.GEN.125 Portable electronic devices**GENERAL**

- (a) PEDs can pose a risk of interference with electronically operated aircraft systems. Those systems could range from the electronic engine control, instruments, navigation or communication equipment, autopilots to any other type of avionic equipment on the aircraft. The interference can result in on-board systems malfunctioning or providing misleading information and communication disturbance. These can also lead to an increased workload for the flight crew.
- (b) Interference may be caused by transmitters being part of the PED's functionality or by unintentional transmissions from the PED. Due to the likely proximity of the PED to any

electronically operated aircraft system and the generally limited shielding found in small aircraft, the risk of interference is to be considered higher than that for larger aircraft with metal airframes.

- (c) During certification of the aircraft, when qualifying the aircraft functions consideration may only have been made of short-term exposure to a high radiating field, with an acceptable mitigating measure being a return to normal function after removal of the threat. This certification assumption may not be true when operating the transmitting PED on board the aircraft.
- (d) It has been found that compliance with the electromagnetic compatibility (EMC) Directive 2004/108/EC and related European standards, as indicated by the CE marking, is not sufficient to exclude the existence of interference. A well-known interference is the demodulation of the transmitted signal from GSM (global system for mobile communications) mobile phones leading to audio disturbances in other systems. Similar interferences are difficult to predict during the PED design and protecting the aircraft's electronic systems against the full range of potential interferences is practically impossible. Therefore, not operating PEDs on-board aircraft is the safest option, especially as effects may not be identified immediately but under the most inconvenient circumstances.
- (e) Guidance to follow in case of fire caused by PEDs is provided by the International Civil Aviation Organisation, 'Emergency response guidance for aircraft incidents involving dangerous goods', ICAO Doc 9481-AN/928.

NCO.GEN.130 Information on emergency and survival equipment carried

Except for aircraft taking-off and landing at the same aerodrome/operating site, the operator shall, at all times, have available for immediate communication to rescue coordination centres (RCCs) lists containing information on the emergency and survival equipment carried on board.

AMC1 NCO.GEN.130 Information on emergency and survival equipment carried**CONTENT OF INFORMATION**

The information, compiled in a list, should include, as applicable:

- (a) the number, colour and type of life rafts and pyrotechnics,
- (b) details of emergency medical supplies and water supplies; and
- (c) the type and frequencies of the emergency portable radio equipment.

NCO.GEN.135 Documents, manuals and information to be carried

- (a) The following documents, manuals and information shall be carried on each flight as originals or copies unless otherwise specified:
- (1) the AFM, or equivalent document(s);
 - (2) the original certificate of registration;
 - (3) the original certificate of airworthiness (CofA);
 - (4) the noise certificate, if applicable;
 - (5) the list of specific approvals, if applicable;
 - (6) the aircraft radio licence, if applicable;
 - (7) the third party liability insurance certificate(s);
 - (8) the journey log, or equivalent, for the aircraft;
 - (9) details of the filed ATS flight plan, if applicable;
 - (10) current and suitable aeronautical charts for the route area of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted;
 - (11) procedures and visual signals information for use by intercepting and intercepted aircraft;
 - (12) the MEL or CDL, if applicable; and
 - (13) any other documentation that may be pertinent to the flight or is required by the States concerned with the flight.
- (b) Notwithstanding (a), on flights:
- (1) intending to take off and land at the same aerodrome/operating site; or
 - (2) remaining within a distance or area determined by the competent authority,
- the documents and information in (a)(2) to (a)(8) may be retained at the aerodrome or operating site.
- (c) Notwithstanding (a), on flights with balloons or sailplanes, excluding touring motor gliders (TMGs), the documents and information in (a)(2) to (a)(8) and (a)(11) to (a)(13) may be carried in the retrieve vehicle.
- (d) The pilot-in-command shall make available within a reasonable time of being requested to do so by the competent authority, the documentation required to be carried on board.

AMC1 NCO.GEN.135(a)(3) Documents, manuals and information to be carried**CERTIFICATE OF AIRWORTHINESS**

The certificate of airworthiness should be a normal certificate of airworthiness, a restricted certificate of airworthiness or a permit to fly issued in accordance with the applicable airworthiness requirements.

AMC1 NCO.GEN.135(a)(10) Documents, manuals and information to be carried**CURRENT AND SUITABLE AERONAUTICAL CHARTS**

- (a) The aeronautical charts carried should contain data appropriate to the applicable air traffic regulations, rules of the air, flight altitudes, area/route and nature of the operation. Due consideration should be given to carriage of textual and graphic representations of:
 - (1) aeronautical data, including, as appropriate for the nature of the operation:
 - (i) airspace structure;
 - (ii) significant points, navigation aids (navaids) and air traffic services (ATS) routes;
 - (iii) navigation and communication frequencies;
 - (iv) prohibited, restricted and danger areas; and
 - (v) sites of other relevant activities that may hazard the flight; and
 - (2) topographical data, including terrain and obstacle data.
- (b) A combination of different charts and textual data may be used to provide adequate and current data.
- (c) The aeronautical data should be appropriate for the current aeronautical information regulation and control (AIRAC) cycle.
- (d) The topographical data should be reasonably recent, having regard to the nature of the planned operation.

GM1 NCO.GEN.135 Documents, manuals and information to be carried**GENERAL**

- (a) In case of loss or theft of documents specified in NCO.GEN.135, the operation may continue until the flight reaches the base or a place where a replacement document can be provided.
- (b) The documents, manuals and information may be available in a form other than on printed paper. An electronic storage medium is acceptable if accessibility, usability and reliability can be assured.

GM1 NCO.GEN.135(a)(1) Documents, manuals and information to be carried**AFM OR EQUIVALENT DOCUMENT**

‘Aircraft flight manual (AFM), or equivalent document’ means the flight manual for the aircraft or other documents containing information required for the operation of the aircraft within the terms of its certificate of airworthiness.

AIRCRAFT FLIGHT MANUAL (AFM) — BALLOONS

At least the operating limitations, normal and emergency procedures should be available to the pilot during operation by providing the specific sections of the AFM or by other means (e.g. placards, quick reference cards) that effectively accomplish the purpose.

GM1 NCO.GEN.135(a)(8) Documents, manuals and information to be carried**JOURNEY LOG OR EQUIVALENT**

'Journey log or equivalent' means that the required information may be recorded in documentation other than a log book, such as the operational flight plan or the aircraft technical log.

GM1 NCO.GEN.135(a)(11) Documents, manuals and information to be carried**PROCEDURES AND VISUAL SIGNALS FOR USE BY INTERCEPTING AND INTERCEPTED AIRCRAFT**

The procedures and the visual signals information for use by intercepting and intercepted aircraft are those contained in the International Civil Aviation Organisation's (ICAO) Annex 2.

GM1 NCO.GEN.135(a)(13) Documents, manuals and information to be carried**DOCUMENTS THAT MAY BE PERTINENT TO THE FLIGHT**

Any other documents that may be pertinent to the flight or required by the States concerned with the flight may include, for example, forms to comply with reporting requirements.

STATES CONCERNED WITH THE FLIGHT

The States concerned are those of origin, transit, overflight and destination of the flight.

NCO.GEN.140 Transport of dangerous goods

- (a) The transport of dangerous goods by air shall be conducted in accordance with Annex 18 to the Chicago Convention as last amended and amplified by the Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Doc 9284-AN/905), including its supplements and any other addenda or corrigenda.
- (b) Dangerous goods shall only be transported by the operator approved in accordance with Annex V (Part-SPA), Subpart G, to Regulation (EU) No 965/2012 except when:
 - (1) they are not subject to the Technical Instructions in accordance with Part 1 of those Instructions; or
 - (2) they are carried by passengers or the pilot-in-command, or are in baggage, in accordance with Part 8 of the Technical Instructions;
 - (3) they are carried by operators of ELA2 aircraft.
- (c) The pilot-in-command shall take all reasonable measures to prevent dangerous goods from being carried on board inadvertently.
- (d) The pilot-in-command shall, in accordance with the Technical Instructions, report without delay to the competent authority and the appropriate authority of the State of occurrence in the event of any dangerous goods accidents or incidents.
- (e) The pilot-in-command shall ensure that passengers are provided with information about dangerous goods in accordance with the Technical Instructions.

AMC1 NCO.GEN.140(d) Transport of dangerous goods**DANGEROUS GOODS ACCIDENT AND INCIDENT REPORTING**

- (a) Any type of dangerous goods incident or accident, or the finding of:
 - (1) undeclared or misdeclared dangerous goods in cargo;
 - (2) forbidden dangerous goods in mail; or
 - (3) forbidden dangerous goods in passenger or crew baggage, or on the person of a passenger or crew membershould be reported. For this purpose, the Technical Instructions consider that reporting of undeclared and misdeclared dangerous goods found in cargo also applies to items of operators' stores that are classified as dangerous goods.
- (b) The first report should be dispatched within 72 hours of the event. It may be sent by any means, including e-mail, telephone or fax. This report should include the details that are known at that time, under the headings identified in 3. If necessary, a subsequent report should be made as soon as possible giving all the details that were not known at the time the first report was sent. If a report has been made verbally, written confirmation should be sent as soon as possible.
- (c) The first and any subsequent report should be as precise as possible and contain the following data, where relevant:
 - (1) date of the incident or accident or the finding of undeclared or misdeclared dangerous goods;
 - (2) location and date of flight;
 - (3) description of the goods;

- (4) proper shipping name (including the technical name, if appropriate) and United Nations (UN)/identification (ID) number, when known;
 - (5) class or division and any subsidiary risk;
 - (6) type of packaging, and the packaging specification marking on it;
 - (7) quantity;
 - (8) name and address of the passenger, etc.;
 - (9) any other relevant details;
 - (10) suspected cause of the incident or accident;
 - (11) action taken;
 - (12) any other reporting action taken; and
 - (13) name, title, address and telephone number of the person making the report.
- (d) Copies of relevant documents and any photographs taken should be attached to the report.
- (e) A dangerous goods accident or incident may also constitute an aircraft accident, serious incident or incident. The criteria for reporting both types of occurrence should be met.
- (f) The following dangerous goods reporting form should be used, but other forms, including electronic transfer of data, may be used provided that at least the minimum information of this AMC is supplied:

DANGEROUS GOODS OCCURRENCE REPORT		DGOR No:	
1. Operator:	2. Date of Occurrence:	3. Local time of occurrence:	
4. Flight date:			
5. Departure aerodrome:		6. Destination aerodrome:	
7. Aircraft type:		8. Aircraft registration:	
9. Location of occurrence:		10. Origin of the goods:	
11. Description of the occurrence, including details of injury, damage, etc. (if necessary continue on the reverse of this form):			
12. Proper shipping name (including the technical name):			13. UN/ID No (when known):
14. Class/Division (when known):	15. Subsidiary risk(s):	16. Packing group:	17. Category (Class 7 only):
18. Type of packaging:	19. Packaging specification marking:	20. No of packages:	21. Quantity (or transport index, if applicable):

22. Name and address of passenger, etc.:	
23. Other relevant information (including suspected cause, any action taken):	
24. Name and title of person making report:	25. Telephone No:
26. Company:	27. Reporters ref:
28. Address:	29. Signature:
	30. Date:
Description of the occurrence (continuation)	

Notes for completion of the form:

1. A dangerous goods accident is as defined in Annex I. For this purpose serious injury is as defined in Regulation (EU) No 996/2010 of the European Parliament and of the Council².
2. The initial report should be dispatched unless exceptional circumstances prevent this. This occurrence report form, duly completed, should be sent as soon as possible, even if all the information is not available.
3. Copies of all relevant documents and any photographs should be attached to this report.
4. Any further information, or any information not included in the initial report, should be sent as soon as possible to the authorities identified in NCO.GEN.140(d).
5. Providing it is safe to do so, all dangerous goods, packaging, documents, etc. relating to the occurrence should be retained until after the initial report has been sent to the authorities identified in NCO.GEN.140(d), and they have indicated whether or not these should continue to be retained.

GM1 NCO.GEN.140(a) Transport of dangerous goods

GENERAL

- (a) The requirement to transport dangerous goods by air in accordance with the Technical Instructions is irrespective of whether:
 - (1) the flight is wholly or partly within or wholly outside the territory of a State; or
 - (2) an approval to carry dangerous goods in accordance with Annex V (Part-SPA), Subpart G is held.
- (b) The Technical Instructions provide that in certain circumstances dangerous goods, which are normally forbidden on an aircraft, may be carried. These circumstances include cases of extreme urgency or when other forms of transport are inappropriate or when full compliance with the prescribed requirements is contrary to the public interest. In these circumstances all the States

² OJ L 295, 12.11.2010, p. 35.

concerned may grant exemptions from the provisions of the Technical Instructions provided that an overall level of safety that is at least equivalent to that provided by the Technical Instructions is achieved. Although exemptions are most likely to be granted for the carriage of dangerous goods that are not permitted in normal circumstances, they may also be granted in other circumstances, such as when the packaging to be used is not provided for by the appropriate packing method or the quantity in the packaging is greater than that permitted. The Technical Instructions also make provision for some dangerous goods to be carried when an approval has been granted only by the State of origin and the competent authority.

- (c) When an exemption is required, the States concerned are those of origin, transit, overflight and destination of the consignment and that of the operator. For the State of overflight, if none of the criteria for granting an exemption are relevant, an exemption may be granted based solely on whether it is believed that an equivalent level of safety in air transport has been achieved.
- (d) The Technical Instructions provide that exemptions and approvals are granted by the 'appropriate national authority', which is intended to be the authority responsible for the particular aspect against which the exemption or approval is being sought. The operator should ensure that all relevant conditions on an exemption or approval are met.
- (e) The exemption or approval referred to in (b) to (d) is in addition to the approval required by Annex V (Part-SPA), Subpart G.

NCO.GEN.145 Immediate reaction to a safety problem

The operator shall implement:

- (a) any safety measures mandated by the competent authority in accordance with ARO.GEN.135(c); and
- (b) any relevant mandatory safety information issued by the Agency, including airworthiness directives.

NCO.GEN.150 Journey log

Particulars of the aircraft, its crew and each journey shall be retained for each flight, or series of flights, in the form of a journey log, or equivalent.

AMC1 NCO.GEN.150 Journey log**GENERAL**

- (a) The aircraft journey log, or equivalent, should include the following items, where applicable:
 - (1) aircraft nationality and registration;
 - (2) date;
 - (3) name of crew member(s);
 - (4) duty assignments of crew members, if applicable;
 - (5) place of departure;
 - (6) place of arrival;
 - (7) time of departure;
 - (8) time of arrival;
 - (9) hours of flight;
 - (10) nature of flight;
 - (11) incidents and observations (if any); and
 - (12) signature of the pilot-in-command.
- (b) The information or parts thereof may be recorded in a form other than on printed paper. Accessibility, usability and reliability should be assured.

NCO.GEN.155 Minimum equipment list

- (a) An MEL may be established taking into account the following:
- (1) the document shall provide for the operation of the aircraft, under specified conditions, with particular instruments, items of equipment or functions inoperative at the commencement of the flight;
 - (2) the document shall be prepared for each individual aircraft, taking account of the operator's relevant operational and maintenance conditions; and
 - (3) the MEL shall be based on the relevant Master Minimum Equipment List (MMEL), as defined in the data established in accordance with Commission Regulation (EU) No 748/2012³, and shall not be less restrictive than the MMEL.
- (b) The MEL and any amendment thereto shall be notified to the competent authority.

AMC1 NCO.GEN.155 Minimum equipment list**CONTENT AND APPROVAL OF THE MEL**

- (a) When an MEL is established, the operator should amend the MEL after any applicable change to the MMEL within the acceptable timescales. The following are applicable changes to the MMEL that require amendment of the MEL:
- (1) a reduction of the rectification interval;
 - (2) change of an item, only when the change is applicable to the aircraft or type of operations and is more restrictive;
 - (3) reduced timescales for the implementation of safety-related amendments may be required by the Agency and/or the competent authority.
- (b) An acceptable timescale for notifying the amended MEL to the competent authority is 90 days from the effective date specified in the approved change to the MMEL.
- (c) In addition to the list of items and related dispatch conditions, the MEL should contain:
- (1) a preamble, including guidance and definitions for flight crew members and maintenance personnel using the MEL. The MEL preamble should:
 - (i) reflect the content of the MMEL preamble as applicable to the MEL scope and extent;
 - (ii) contain terms and definitions used in the MEL;
 - (iii) contain any other relevant specific information for the MEL scope and use that is not originally provided in the MMEL;
 - (iv) provide guidance on how to identify the origin of a failure or malfunction to the extent necessary for appropriate application of the MEL;
 - (v) provide guidance on the management of multiple unserviceabilities, based on the guidance given in the MMEL; and
 - (vi) provide guidance on placarding of inoperative items to inform crew members of equipment condition as appropriate. In particular, when such items are accessible to the crew during flight, the control(s) and indicator(s) related to inoperative unit(s) should be clearly placarded.

³ OJ L 224, 21.8.2012, p. 1.

- (2) the revision status of the MMEL upon which the MEL is based and the revision status of the MEL;
 - (3) the scope, extent and purpose of the MEL;
 - (4) operational and maintenance procedures as part of the MEL or by means of reference to another appropriate document, based on the operational and maintenance procedures referenced in the MMEL; and
 - (5) the dispatch conditions associated with flights conducted in accordance with special approvals held by the operator in accordance with Part-SPA.
- (d) The operator should:
- (1) establish rectification intervals for each inoperative instrument, item of equipment or function listed in the MEL. The rectification interval in the MEL should not be less restrictive than the corresponding rectification interval in the MMEL. The definitions and categories of rectification intervals are provided in CS-MMEL as well as in CS-GEN-MMEL; and
 - (2) establish an effective rectification programme.
- (e) The operator should establish the operational and maintenance procedures referenced in the MEL, taking into account the operational and maintenance procedures referenced in the MMEL. These procedures should be part of the operator's manuals or the MEL.
- (f) The operator should amend the operational and maintenance procedures referenced in the MEL after any applicable change to the operational and maintenance procedures referenced in the MMEL.
- (g) Unless otherwise specified in the MEL, the operator should complete:
- (1) the operational procedures referenced in the MEL when planning for and/or operating with the listed item inoperative; and
 - (2) the maintenance procedures referenced in the MEL prior to operating with the listed item inoperative.

AMC2 NCO.GEN.155 Minimum equipment list**FORMAT OF THE MEL**

The MEL format, the presentation of MEL items and dispatch conditions should:

- (a) reflect those of the MMEL;
- (b) follow the ATA 100/2200 Specification numbering system for MEL items; and
- (c) when different from (a) and (b), be clear and unambiguous.

AMC3 NCO.GEN.155 Minimum equipment list**EXTENT OF THE MEL**

The operator should include guidance in the MEL on how to deal with any failures that occur between the commencement of the flight and the start of the take-off. If a failure occurs between the commencement of the flight and the start of the take-off, any decision to continue the flight should be subject to pilot judgement and good airmanship. The pilot-in-command may refer to the MEL before any decision to continue the flight is taken.

AMC4 NCO.GEN.155 Minimum equipment list

OPERATIONAL AND MAINTENANCE PROCEDURES

- (a) The operational and maintenance procedures referenced in the MEL should be based on the operational and maintenance procedures referenced in the MMEL. Modified procedures may, however, be developed by the operator when they provide the same level of safety as required by the MMEL. Modified maintenance procedures should be developed in accordance with the applicable airworthiness requirements.
- (b) Providing appropriate operational and maintenance procedures referenced in the MEL, regardless of who developed them, is the responsibility of the operator.
- (c) Any item in the MEL requiring an operational or maintenance procedure to ensure an acceptable level of safety should be so identified in the 'remarks' or 'exceptions' column/part/section of the MEL. This will normally be '(O)' for an operational procedure, or '(M)' for a maintenance procedure. '(O)(M)' means both operational and maintenance procedures are required.
- (d) The satisfactory accomplishment of all procedures, regardless of who performs them, is the responsibility of the operator.

AMC5 NCO.GEN.155 Minimum equipment list

OPERATIONAL AND MAINTENANCE PROCEDURES — APPLICABLE CHANGES

- (a) Changes to the operational and maintenance procedures referenced in the MMEL are considered applicable and require the amendment of the maintenance and operating procedures referenced in the MEL when:
 - (1) the modified procedure is applicable to the operator's MEL; and
 - (2) the purpose of this change is to improve compliance with the intent of the associated MMEL dispatch condition.
- (b) An acceptable timescale for the amendments of maintenance and operating procedures, as defined in (a), should be 90 days from the date when the amended procedures referenced in the MMEL are made available. Reduced timescales for the implementation of safety-related amendments may be required if the competent authority consider it necessary.

GM1 NCO.GEN.155 Minimum equipment list

GENERAL

- (a) The Minimum Equipment List (MEL) is a document that lists the equipment that may be temporarily inoperative, subject to certain conditions, at the commencement of flight. This document is prepared by the operator for their own particular aircraft, taking account of their aircraft configuration and all those individual variables that cannot be addressed at MMEL level, such as operating environment, route structure, geographic location, aerodromes where spare parts and maintenance capabilities are available, etc.
- (b) The MMEL, as defined in the mandatory part of the operational suitability data established in accordance with Regulation (EU) No 748/2012, is developed in compliance with CS-MMEL or CS-GEN-MMEL. These Certification Specifications contain, among other, guidance intended to standardise the level of relief granted in MMELs, in particular for items that are subject to operational requirements. If an MMEL established as part of the operational suitability data is not available and items subject to operational requirements are listed in the available MMEL

without specific relief or dispatch conditions but only with a reference to the operational requirements, the operator may refer to CS-MMEL or CS-GEN-MMEL guidance material, as applicable, to develop the relevant MEL content for such items.

GM2 NCO.GEN.155 Minimum equipment list

SCOPE OF THE MEL

- (a) Examples of special approvals in accordance with Part-SPA may be:
 - (1) RVSM
 - (2) LVO
- (b) When an aircraft has installed equipment which is not required for the operations conducted, the operator may wish to delay rectification of such items for an indefinite period. Such cases are considered to be out of the scope of the MEL, therefore modification of the aircraft is appropriate and deactivation, inhibition or removal of the item should be accomplished by an appropriate approved modification procedure.

GM3 NCO.GEN.155 Minimum equipment list

PURPOSE OF THE MEL

The MEL is an alleviating document having the purpose to identify the minimum equipment and conditions to operate safely an aircraft having inoperative equipment. Its purpose is not, however, to encourage the operation of aircraft with inoperative equipment. It is undesirable for aircraft to be dispatched with inoperative equipment and such operations are permitted only as a result of careful analysis of each item to ensure that the acceptable level of safety, as intended in the applicable airworthiness and operational requirements, is maintained. The continued operation of an aircraft in this condition should be minimised.

GM4 NCO.GEN.155 Minimum equipment list

OPERATIONAL AND MAINTENANCE PROCEDURES

- (a) Operational and maintenance procedures are an integral part of the compensating conditions needed to maintain an acceptable level of safety, enabling the competent authority to approve the MEL.
- (b) Normally, operational procedures are accomplished by the flight crew; however, other personnel may be qualified and authorised to perform certain functions.
- (c) Normally, maintenance procedures are accomplished by the maintenance personnel; however, other personnel may be qualified and authorised to perform certain functions in accordance with the applicable airworthiness requirements.
- (d) Operational and maintenance procedures, regardless of the document where they are contained, should be readily available for use when needed for the application of the MEL.
- (e) Unless specifically permitted by a maintenance procedure, an inoperative item may not be removed from the aircraft.

SUBPART B: OPERATIONAL PROCEDURES

NCO.OP.100 Use of aerodromes and operating sites

The pilot-in-command shall only use aerodromes and operating sites that are adequate for the type of aircraft and operation concerned.

GM1 NCO.OP.100 Use of aerodromes and operating sites

BALLOONS

An adequate site is a site that the pilot-in-command considers to be satisfactory, taking account of the applicable performance requirements and site characteristics.

NCO.OP.105 Specification of isolated aerodromes — aeroplanes

For the selection of alternate aerodromes and the fuel policy, the pilot-in-command shall consider an aerodrome as an isolated aerodrome if the flying time to the nearest adequate destination alternate aerodrome is more than:

- (a) for aeroplanes with reciprocating engines, 60 minutes; or
- (b) for aeroplanes with turbine engines, 90 minutes.

NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

- (a) For instrument flight rules (IFR) flights, the pilot-in-command shall select and use aerodrome operating minima for each departure, destination and alternate aerodrome. Such minima shall:
 - (1) not be lower than those established by the State in which the aerodrome is located, except when specifically approved by that State; and
 - (2) when undertaking low visibility operations, be approved by the competent authority in accordance with Annex V (Part-SPA), Subpart E to Regulation (EU) No 965/2012.
- (b) When selecting the aerodrome operating minima, the pilot-in-command shall take the following into account:
 - (1) the type, performance and handling characteristics of the aircraft;
 - (2) his/her competence and experience;
 - (3) the dimensions and characteristics of the runways and final approach and take-off areas (FATOs) that may be selected for use;
 - (4) the adequacy and performance of the available visual and non-visual ground aids;
 - (5) the equipment available on the aircraft for the purpose of navigation and/or control of the flight path, during the take-off, the approach, the flare, the landing, the rollout and the missed approach;
 - (6) the obstacles in the approach, the missed approach and the climb-out areas necessary for the execution of contingency procedures;
 - (7) the obstacle clearance altitude/height for the instrument approach procedures;
 - (8) the means to determine and report meteorological conditions; and
 - (9) the flight technique to be used during the final approach.
- (c) The minima for a specific type of approach and landing procedure shall only be used if:
 - (1) the ground equipment required for the intended procedure is operative;
 - (2) the aircraft systems required for the type of approach are operative;
 - (3) the required aircraft performance criteria are met; and
 - (4) the pilot is qualified appropriately.

AMC1 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

TAKE-OFF OPERATIONS

(a) General:

- (1) Take-off minima should be expressed as visibility (VIS) or runway visual range (RVR) limits, taking into account all relevant factors for each aerodrome planned to be used and aircraft 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, it should be specified.
- (2) When the reported meteorological visibility is below that required for take-off and RVR is not reported, a take-off should only be commenced if the pilot-in-command can determine that the visibility along the take-off runway/area is equal to or better than the required minimum.
- (3) When no reported meteorological visibility or RVR is available, a take-off should only be commenced if the pilot-in-command can determine that the RVR/VIS along the take-off runway/area is equal to or better than the required minimum.

(b) Visual reference:

- (1) The take-off minima should be selected to ensure sufficient guidance to control the aircraft in the event of both a rejected take-off in adverse circumstances and a continued take-off after failure of the critical engine.
- (2) For night operations, ground lights should be available to illuminate the runway/final approach and take-off area (FATO) and any obstacles.

AMC2 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

VISUAL APPROACH

For a visual approach operation, the RVR should not be less than 800 m.

AMC3 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

EFFECT ON LANDING MINIMA OF TEMPORARILY FAILED OR DOWNGRADED GROUND EQUIPMENT

- (a) Non-precision approaches requiring a final approach fix (FAF) and/or missed approach point (MAPt) should not be conducted where a method of identifying the appropriate fix is not available.
- (b) A minimum RVR of 750 m should be used for CAT I approaches in the absence of centreline lines and/or touchdown zone lights.
- (c) Where approach lighting is partly unavailable, minima should take account of the serviceable length of approach lighting.

GM1 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

COMMERCIALLY AVAILABLE INFORMATION

An acceptable method of selecting aerodrome operating minima is through the use of commercially available information.

GM2 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

VERTICAL PATH CONTROL

Due consideration should be given to the selection of an appropriate technique for vertical path control on non-precision approaches (NPAs). Where appropriate instrumentation and/or facilities are available, a continuous descent final approach technique (CDFA) usually offers increased safety and a lower workload compared to a step-down approach.

GM3 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

CRITERIA FOR ESTABLISHING RVR/CMV

- (a) In order to qualify for the lowest allowable values of RVR/CMV specified in Table 3.A, the instrument approach should meet at least the following facility requirements and associated conditions:
- (1) Instrument approaches with designated vertical profile up to and including 4.5° for Category A and B aeroplanes, or 3.77° for Category C and D aeroplanes, where the facilities are:
 - (i) instrument landing system (ILS)/microwave landing system (MLS)/GBAS landing system (GLS)/precision approach radar (PAR); or
 - (ii) approach procedure with vertical guidance (APV); andwhere the final approach track is offset by not more than 15° for Category A and B aeroplanes or by not more than 5° for Category C and D aeroplanes.
 - (2) Instrument approach operations flown using the CDFA technique with a nominal vertical profile, up to and including 4.5° for Category A and B aeroplanes, or 3.77° for Category C and D aeroplanes, where the facilities are non-directional beacon (NDB), NDB/distance measuring equipment (DME), VHF omnidirectional radio range (VOR), VOR/DME, localiser (LOC), LOC/DME, VHF direction finder (VDF), surveillance radar approach (SRA) or global navigation satellite system (GNSS)/lateral navigation (LNAV), with a final approach segment of at least 3 NM, which also fulfil the following criteria:
 - (i) the final approach track is offset by not more than 15° for Category A and B aeroplanes or by not more than 5° for Category C and D aeroplanes;
 - (ii) the final approach fix (FAF) or another appropriate fix where descent is initiated is available, or distance to threshold (THR) is available by flight management system (FMS)/area navigation (NDB/DME) or DME; and
 - (iii) the missed approach point (MAPt) is determined by timing, the distance from FAF to THR is ≤ 8 NM.
 - (3) Instrument approaches where the facilities are NDB, NDB/DME, VOR, VOR/DME, LOC, LOC/DME, VDF, SRA or GNSS/LNAV, not fulfilling the criteria in (a)(2), or with an minimum descent height (MDH) $\geq 1\,200$ ft.
- (b) The missed approach operation, after an approach operation has been flown using the CDFA technique, should be executed when reaching the decision height/altitude (DH/A) or the MAPt, whichever occurs first. The lateral part of the missed approach procedure should be flown via the MAPt unless otherwise stated on the approach chart.

GM4 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters**DETERMINATION OF RVR/CMV/VIS MINIMA FOR NPA, APV, CAT I — AEROPLANES**

- (a) The minimum RVR/CMV/VIS should be the highest of the values specified in Table 2 and Table 3.A but not greater than the maximum values specified in Table 3.A, where applicable.
- (b) The values in Table 2 should be derived from the formula below:

required RVR/VIS (m) = $[(DH/MDH \text{ (ft)} \times 0.3048) / \tan \alpha] - \text{length of approach lights (m)}$;

where α is the calculation angle, being a default value of 3.00° increasing in steps of 0.10° for each line in Table 2 up to 3.77° and then remaining constant.
- (c) If the approach is flown with a level flight segment at or above MDA/H, 200 m should be added for Category A and B aeroplanes and 400 m for Category C and D aeroplanes to the minimum RVR/CMV/VIS value resulting from the application of Table 2 and Table 3.A.
- (d) An RVR of less than 750 m, as indicated in Table 2, may be used:
 - (1) for CAT I operations to runways with full approach lighting system (FALS), runway touchdown zone lights (RTZL) and runway centreline lights (RCLL);
 - (2) for CAT I operations to runways without RTZL and RCLL when using an approved head-up guidance landing system (HUDLS), or equivalent approved system, or when conducting a coupled approach or flight-director-flown approach to a DH. The instrument landing system (ILS) should not be published as a restricted facility; and
 - (3) for approach procedure with vertical guidance (APV) operations to runways with FALS, RTZL and RCLL when using an approved head-up display (HUD).
- (e) Lower values than those specified in Table 2 may be used for HUDLS and auto-land operations if approved in accordance with SPA.LVO.
- (f) The visual aids should comprise standard runway day markings and approach and runway lights as specified in Table 1. The competent authority may approve that RVR values relevant to a basic approach lighting system (BALS) are used on runways where the approach lights are restricted in length below 210 m due to terrain or water, but where at least one cross-bar is available.
- (g) For night operations or for any operation where credit for runway and approach lights is required, the lights should be on and serviceable, except as provided for in Table 1.
- (h) For single-pilot operations, the minimum RVR/VIS should be calculated in accordance with the following additional criteria:
 - (1) an RVR of less than 800 m, as indicated in Table 2, may be used for CAT I approaches provided any of the following is used at least down to the applicable DH:
 - (i) a suitable autopilot, coupled to an ILS, microwave landing system (MLS) or GBAS landing system (GLS) that is not published as restricted; or
 - (ii) an approved HUDLS, including, where appropriate, enhanced vision system (EVS), or equivalent approved system;
 - (2) where RTZL and/or RCLL are not available, the minimum RVR/CMV should not be less than 600 m; and
 - (3) an RVR of less than 800 m, as indicated in Table 2, may be used for APV operations to runways with FALS, RTZL and RCLL when using an approved HUDLS, or equivalent approved system, or when conducting a coupled approach to a DH equal to or greater than 250 ft.

Table 1: Approach lighting systems

Class of lighting facility	Length, configuration and intensity of approach lights
FALS	CAT I lighting system (HIALS \geq 720 m) distance coded centreline, Barrette centreline
IALS	Simple approach lighting system (HIALS 420 – 719 m) single source, Barrette
BALS	Any other approach lighting system (HIALS, MIALS or ALS 210 – 419 m)
NALS	Any other approach lighting system (HIALS, MIALS or ALS $<$ 210 m) or no approach lights

Note: HIALS: high intensity approach lighting system;

MIALS: medium intensity approach lighting system;

ALS: approach lighting system.

Table 2: RVR/CMV vs. DH/MDH

DH or MDH			Class of lighting facility			
			FALS	IALS	BALS	NALS
			See (d), (e), (h). above for RVR $<$ 750/800 m			
ft			RVR/CMV (m)			
200	-	210	550	750	1 000	1 200
211	-	220	550	800	1 000	1 200
221	-	230	550	800	1 000	1 200
231	-	240	550	800	1 000	1 200
241	-	250	550	800	1 000	1 300
251	-	260	600	800	1 100	1 300
261	-	280	600	900	1 100	1 300
281	-	300	650	900	1 200	1 400
301	-	320	700	1 000	1 200	1 400
321	-	340	800	1 100	1 300	1 500
341	-	360	900	1 200	1 400	1 600

DH or MDH			Class of lighting facility			
			FALS	IALS	BALS	NALS
			See (d), (e), (h). above for RVR < 750/800 m			
ft			RVR/CMV (m)			
361	-	380	1 000	1 300	1 500	1 700
381	-	400	1 100	1 400	1 600	1 800
401	-	420	1 200	1 500	1 700	1 900
421	-	440	1 300	1 600	1 800	2 000
441	-	460	1 400	1 700	1 900	2 100
461	-	480	1 500	1 800	2 000	2 200
481		500	1 500	1 800	2 100	2 300
501	-	520	1 600	1 900	2 100	2 400
521	-	540	1 700	2 000	2 200	2 400
541	-	560	1 800	2 100	2 300	2 500
561	-	580	1 900	2 200	2 400	2 600
581	-	600	2 000	2 300	2 500	2 700
601	-	620	2 100	2 400	2 600	2 800
621	-	640	2 200	2 500	2 700	2 900
641	-	660	2 300	2 600	2 800	3 000
661	-	680	2 400	2 700	2 900	3 100
681	-	700	2 500	2 800	3 000	3 200
701	-	720	2 600	2 900	3 100	3 300
721	-	740	2 700	3 000	3 200	3 400
741	-	760	2 700	3 000	3 300	3 500
761	-	800	2 900	3 200	3 400	3 600
801	-	850	3 100	3 400	3 600	3 800

DH or MDH			Class of lighting facility			
			FALS	IALS	BALS	NALS
			See (d), (e), (h). above for RVR < 750/800 m			
ft			RVR/CMV (m)			
851	-	900	3 300	3 600	3 800	4 000
901	-	950	3 600	3 900	4 100	4 300
951	-	1 000	3 800	4 100	4 300	4 500
1 001	-	1 100	4 100	4 400	4 600	4 900
1 101	-	1 200	4 600	4 900	5 000	5 000
1 201 and above			5 000	5 000	5 000	5 000

Table 3.A: CAT I, APV, NPA — aeroplanes**Minimum and maximum applicable RVR/CMV (lower and upper cut-off limits)**

Facility/conditions	RVR/CMV (m)	Aeroplane category			
		A	B	C	D
ILS, MLS, GLS, PAR, GNSS/SBAS, GNSS/VNAV	Min	According to Table 2			
	Max	1 500	1 500	2 400	2 400
NDB, NDB/DME, VOR, VOR/DME, LOC, LOC/DME, VDF, SRA, GNSS/LNAV with a procedure that fulfils the criteria in GM3 NCO.OP.110 (a)(2)	Min	750	750	750	750
	Max	1 500	1 500	2 400	2 400
For NDB, NDB/DME, VOR, VOR/DME, LOC, LOC/DME, VDF, SRA, GNSS/LNAV: — not fulfilling the criteria in GM3 NCO.OP.110 (a)(2), or — with a DH or MDH $\geq 1\,200$ ft	Min	1 000	1 000	1 200	1 200
	Max	According to Table 2 if flown using the CDFA technique, otherwise an add-on of 200/400 m applies to the values in Table 2 but not to result in a value exceeding 5 000 m.			

DETERMINATION OF RVR/CMV/VIS MINIMA FOR NPA, CAT I — HELICOPTERS

- (a) For non-precision approach (NPA) operations, the minima specified in Table 4.1.H should apply:
- (1) where the missed approach point is within $\frac{1}{2}$ NM of the landing threshold, the approach minima specified for FALS may be used regardless of the length of approach lights available. However, FATO/runway edge lights, threshold lights, end lights and FATO/runway markings are still required;
 - (2) for night operations, ground lights should be available to illuminate the FATO/runway and any obstacles; and
 - (3) for single-pilot operations, the minimum RVR is 800 m or the minima in Table 2, whichever is higher.
- (b) For CAT I operations, the minima specified in Table 4.2.H should apply:
- (1) for night operations, ground light should be available to illuminate the FATO/runway and any obstacles;
 - (2) for single-pilot operations, the minimum RVR/VIS should be calculated in accordance with the following additional criteria:
 - (i) an RVR of less than 800 m should not be used except when using a suitable autopilot coupled to an ILS, MLS or GLS, in which case normal minima apply; and

- (ii) the DH applied should not be less than 1.25 times the minimum use height for the autopilot.

Table 4.1.H: Onshore NPA minima

MDH (ft) *	Facilities vs. RVR/CMV (m) **, ***			
	FALS	IALS	BALS	NALS
250 – 299	600	800	1 000	1 000
300 – 449	800	1 000	1 000	1 000
450 and above	1 000	1 000	1 000	1 000

*: The MDH 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 10 ft, which may be done for operational purposes, e.g. conversion to MDA.

**: The tables are only applicable to conventional approaches with a nominal descent slope of not greater than 4°. Greater descent slopes will usually require that visual glide slope guidance (e.g. precision path approach indicator (PAPI)) is also visible at the MDH.

***: FALS comprise FATO/runway markings, 720 m or more of high intensity/medium intensity (HI/MI) approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.

IALS comprise FATO/runway markings, 420 – 719 m of HI/MI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.

BALS comprise FATO/runway markings, < 420 m of HI/MI approach lights, any length of low intensity (LI) approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.

NALS comprise FATO/runway markings, FATO/runway edge lights, threshold lights, FATO/runway end lights or no lights at all.

Table 4.2.H: Onshore CAT I minima

DH (ft) *	Facilities vs. RVR/CMV (m) **, ***			
	FALS	IALS	BALS	NALS
200	500	600	700	1 000
201 – 250	550	650	750	1 000
251 – 300	600	700	800	1 000
301 and above	750	800	900	1 000

*: The DH 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 10 ft, which may be done for operational purposes, e.g. conversion to DA.

**: The table is applicable to conventional approaches with a glide slope up to and including 4°.

***: FALS comprise FATO/runway markings, 720 m or more of HI/MI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.

IALS comprise FATO/runway markings, 420 – 719 m of HI/MI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.

BALS comprise FATO/runway markings, < 420 m of HI/MI approach lights, any length of LI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.

NALS comprise FATO/runway markings, FATO/runway edge lights, threshold lights, FATO/runway end lights or no lights at all.

GM5 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

CONVERSION OF REPORTED METEOROLOGICAL VISIBILITY TO RVR/CMV

- (a) A conversion from meteorological visibility to RVR/CMV should not be used:
 - (1) when reported RVR is available;
 - (2) for calculating take-off minima; and
 - (3) for other RVR minima less than 800 m.
- (b) If the RVR is reported as being above the maximum value assessed by the aerodrome operator, e.g. 'RVR more than 1 500 m', it should not be considered as a reported value.
- (c) For all other circumstances, Table 5 should be used.

Table 5: Conversion of reported meteorological visibility to RVR/CMV

Lighting elements in operation	RVR/CMV = reported meteorological visibility x	
	Day	Night
High intensity (HI) approach and runway lights	1.5	2.0
Any type of light installation other than above	1.0	1.5
No lights	1.0	not applicable

GM6 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

AIRCRAFT CATEGORIES

- (a) Aircraft categories should be based on the indicated airspeed at threshold (V_{AT}), which is equal to the stalling speed (V_{SO}) multiplied by 1.3 or where published 1-g (gravity) stall speed (V_{S1g}) multiplied by 1.23 in the landing configuration at the maximum certified landing mass. If both V_{SO} and V_{S1g} are available, the higher resulting V_{AT} should be used.
- (b) The aircraft categories specified in the Table 6 should be used.

Table 6: Aircraft categories corresponding to VAT values

Aircraft category	V_{AT}
A	Less than 91 kt
B	from 91 to 120 kt
C	from 121 to 140 kt
D	from 141 to 165 kt
E	from 166 to 210 kt

GM7 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters**CONTINUOUS DESCENT FINAL APPROACH (CDFA) — AEROPLANES****(a) Introduction**

- (1) Controlled flight into terrain (CFIT) is a major hazard in aviation. Most CFIT accidents occur in the final approach segment of non-precision approaches; the use of stabilised-approach criteria on a continuous descent with a constant, predetermined vertical path is seen as a major improvement in safety during the conduct of such approaches. The following techniques are adopted as widely as possible, for all approaches.
- (2) The elimination of level flight segments at MDA close to the ground during approaches, and the avoidance of major changes in attitude and power/thrust close to the runway that can destabilise approaches, are seen as ways to reduce operational risks significantly.
- (3) The term CDFA has been selected to cover a flight technique for any type of NPA operation.
- (4) The advantages of CDFA are as follows:
 - (i) the technique enhances safe approach operations by the utilisation of standard operating practices;
 - (ii) the technique is similar to that used when flying an ILS approach, including when executing the missed approach and the associated missed approach procedure manoeuvre;
 - (iii) the aeroplane attitude may enable better acquisition of visual cues;
 - (iv) the technique may reduce pilot workload;
 - (v) the approach profile is fuel efficient;
 - (vi) the approach profile affords reduced noise levels; and
 - (vii) the technique affords procedural integration with APV operations.

(b) CDFA

- (1) Continuous descent final approach is defined in Annex I to the Regulation on Air operations.

- (2) An approach is only suitable for application of a CDFA technique when it is flown along a nominal vertical profile; a nominal vertical profile is not forming part of the approach procedure design, but can be flown as a continuous descent. The nominal vertical profile information may be published or displayed on the approach chart to the pilot by depicting the nominal slope or range/distance vs. height. Approaches with a nominal vertical profile are considered to be:
- (i) NDB, NDB/DME (non-directional beacon/distance measuring equipment);
 - (ii) VOR (VHF omnidirectional radio range), VOR/DME;
 - (iii) LOC (localiser), LOC/DME;
 - (iv) VDF (VHF direction finder), SRA (surveillance radar approach); and
 - (v) GNSS/LNAV (global navigation satellite system/lateral navigation).
- (3) Stabilised approach (SAP) is defined in Annex I to the Regulation on Air operations.
- (i) The control of the descent path is not the only consideration when using the CDFA technique. Control of the aeroplane's configuration and energy is also vital to the safe conduct of an approach.
 - (ii) The control of the flight path, described above as one of the requirements for conducting an SAP, should not be confused with the path requirements for using the CDFA technique.
 - (iii) The predetermined approach slope requirements for applying the CDFA technique are established by the following:
 - (A) the published 'nominal' slope information when the approach has a nominal vertical profile; and
 - (B) the designated final-approach segment minimum of 3 NM, and maximum, when using timing techniques, of 8 NM.
 - (iv) An SAP will never have any level segment of flight at DA/H or MDA/H, as applicable. This enhances safety by mandating a prompt missed approach procedure manoeuvre at DA/H or MDA/H.
 - (v) An approach using the CDFA technique will always be flown as an SAP, since this is a requirement for applying CDFA. However, an SAP does not have to be flown using the CDFA technique, for example a visual approach.

GM8 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

ONSHORE AERODROME DEPARTURE PROCEDURES — HELICOPTERS

The cloud base and visibility should be such as to allow the helicopter to be clear of cloud at the take-off decision point (TDP), and for the pilot flying to remain in sight of the surface until reaching the minimum speed for flight in instrument meteorological conditions, as given in the AFM.

NCO.OP.111 Aerodrome operating minima — NPA, APV, CAT I operations

- (a) The decision height (DH) to be used for a non-precision approach (NPA) flown with the continuous descent final approach (CDFA) technique, approach procedure with vertical guidance (APV) or category I (CAT I) operation shall not be lower than the highest of:
- (1) the minimum height to which the approach aid can be used without the required visual reference;
 - (2) the obstacle clearance height (OCH) for the category of aircraft;
 - (3) the published approach procedure DH where applicable;
 - (4) the system minimum specified in Table 1; or
 - (5) the minimum DH specified in the AFM or equivalent document, if stated.
- (b) The minimum descent height (MDH) for an NPA operation flown without the CDFA technique shall not be lower than the highest of:
- (1) the OCH for the category of aircraft;
 - (2) the system minimum specified in Table 1; or
 - (3) the minimum MDH specified in the AFM, if stated.

Table 1**System minima**

Facility	Lowest DH/MDH (ft)
Instrument landing system (ILS)	200
Global navigation satellite system (GNSS)/Satellite-based augmentation system (SBAS) (Lateral precision with vertical guidance approach (LPV))	200
GNSS (Lateral Navigation (LNAV))	250
GNSS/Baro-vertical navigation (VNAV) (LNAV/VNAV)	250
Localiser (LOC) with or without distance measuring equipment (DME)	250
Surveillance radar approach (SRA) (terminating at ½ NM)	250
SRA (terminating at 1 NM)	300
SRA (terminating at 2 NM or more)	350
VHF omnidirectional radio range (VOR)	300
VOR/DME	250
Non-directional beacon (NDB)	350
NDB/DME	300

VHF direction finder (VDF)	350
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AMC1 NCO.OP.111 Aerodrome operating minima — NPA, APV, CAT I operations**NPA FLOWN WITH THE CDFA TECHNIQUE**

When flying a non-precision approach operation using the CDFA technique, the pilot-in-command should ensure that when executing a missed approach, the initiation of the go-around is done at or above the DA/H to avoid flying below the MDA/H.

NCO.OP.112 Aerodrome operating minima — circling operations with aeroplanes

- (a) The MDH for a circling operation with aeroplanes shall not be lower than the highest of:
- (1) the published circling OCH for the aeroplane category;
 - (2) the minimum circling height derived from Table 1; or
 - (3) the DH/MDH of the preceding instrument approach procedure.
- (b) The minimum visibility for a circling operation with aeroplanes shall be the highest of:
- (1) the circling visibility for the aeroplane category, if published;
 - (2) the minimum visibility derived from Table 2; or
 - (3) the runway visual range/converted meteorological visibility (RVR/CMV) of the preceding instrument approach procedure.

Table 1**MDH and minimum visibility for circling vs. aeroplane category**

	Aeroplane category			
	A	B	C	D
MDH (ft)	400	500	600	700
Minimum meteorological visibility (m)	1500	1600	2400	3600

GM1 NCO.OP.112 Aerodrome operating minima — circling operations with aeroplanes**SUPPLEMENTAL INFORMATION**

- (a) The purpose of this Guidance Material is to provide pilots with supplemental information regarding the application of aerodrome operating minima in relation to circling approaches.
- (b) Conduct of flight — general:
- (1) the MDH and obstacle clearance height (OCH) included in the procedure are referenced to aerodrome elevation;
 - (2) the MDA is referenced to mean sea level; and
 - (3) for these procedures, the applicable visibility is the meteorological visibility.
- (c) Instrument approach followed by visual manoeuvring (circling) without prescribed tracks:
- (1) When the aeroplane is on the initial instrument approach, before visual reference is stabilised, but not below MDA/H — the aeroplane should follow the corresponding instrument approach procedure until the appropriate instrument MAPt is reached.
 - (2) At the beginning of the level flight phase at or above the MDA/H, the instrument approach track determined by radio navigation aids, RNAV, RNP or ILS, microwave landing system (MLS) or GBAS landing system (GLS) should be maintained until the pilot:
 - (i) estimates that, in all probability, visual contact with the runway of intended landing or the runway environment will be maintained during the entire circling procedure;

- (ii) estimates that the aeroplane is within the circling area before commencing circling; and
 - (iii) is able to determine the aeroplane's position in relation to the runway of intended landing with the aid of the appropriate external references.
- (3) When reaching the published instrument MAPt and the conditions stipulated in (c)(2) are unable to be established by the pilot, a missed approach should be carried out in accordance with that instrument approach procedure.
- (4) After the aeroplane has left the track of the initial instrument approach, the flight phase outbound from the runway should be limited to an appropriate distance, which is required to align the aeroplane onto the final approach. Such manoeuvres should be conducted to enable the aeroplane:
 - (i) to attain a controlled and stable descent path to the intended landing runway; and
 - (ii) to remain within the circling area and in such a way that visual contact with the runway of intended landing or runway environment is maintained at all times.
- (5) Flight manoeuvres should be carried out at an altitude/height that is not less than the circling MDA/H.
- (6) Descent below MDA/H should not be initiated until the threshold of the runway to be used has been appropriately identified. The aeroplane should be in a position to continue with a normal rate of descent and land within the touchdown zone.
- (d) Instrument approach followed by a visual manoeuvring (circling) with prescribed track:
 - (1) The aeroplane should remain on the initial instrument approach procedure until one of the following is reached:
 - (i) the prescribed divergence point to commence circling on the prescribed track; or
 - (ii) the MAPt.
 - (2) The aeroplane should be established on the instrument approach track determined by the radio navigation aids, RNAV, RNP, or ILS, MLS or GLS in level flight at or above the MDA/H at or by the circling manoeuvre divergence point.
 - (3) If the divergence point is reached before the required visual reference is acquired, a missed approach should be initiated not later than the MAPt and completed in accordance with the initial instrument approach procedure.
 - (4) When commencing the prescribed circling manoeuvre at the published divergence point, the subsequent manoeuvres should be conducted to comply with the published routing and published heights/altitudes.
 - (5) Unless otherwise specified, once the aeroplane is established on the prescribed track(s), the published visual reference does not need to be maintained unless:
 - (i) required by the State of the aerodrome; or
 - (ii) the circling MAPt (if published) is reached.
 - (6) If the prescribed circling manoeuvre has a published MAPt and the required visual reference has not been obtained by that point, a missed approach should be executed in accordance with (e)(2) and (e)(3).
 - (7) Subsequent further descent below MDA/H should only commence when the required visual reference has been obtained.

- (8) Unless otherwise specified in the procedure, final descent should not be commenced from MDA/H until the threshold of the intended landing runway has been identified and the aeroplane is in a position to continue with a normal rate of descent to land within the touchdown zone.
- (e) Missed approach:
- (1) Missed approach during the instrument procedure prior to circling:
- (i) if the missed approach is required to be flown when the aeroplane is positioned on the instrument approach track defined by radio navigation aids, RNAV, RNP or ILS, MLS or GLS and before commencing the circling manoeuvre, the published missed approach for the instrument approach should be followed; or
 - (ii) if the instrument approach procedure is carried out with the aid of an ILS, MLS or a stabilised approach (SAp), the MAPt associated with an ILS or MLS procedure without glide path (GP-out procedure) or the SAp, where applicable, should be used.
- (2) If a prescribed missed approach is published for the circling manoeuvre, this overrides the manoeuvres prescribed below.
- (3) If visual reference is lost while circling to land after the aeroplane has departed from the initial instrument approach track, the missed approach specified for that particular instrument approach should be followed. It is expected that the pilot will make an initial climbing turn toward the intended landing runway to a position overhead of the aerodrome where the pilot will establish the aeroplane in a climb on the instrument missed approach segment.
- (4) The aeroplane should not leave the visual manoeuvring (circling) area, which is obstacle protected, unless:
- (i) established on the appropriate missed approach procedure; or
 - (ii) at minimum sector altitude (MSA).
- (5) All turns should be made in the same direction and the aeroplane should remain within the circling protected area while climbing either:
- (i) to the altitude assigned to any published circling missed approach manoeuvre if applicable;
 - (ii) to the altitude assigned to the missed approach of the initial instrument approach;
 - (iii) to the MSA;
 - (iv) to the minimum holding altitude (MHA) applicable for transition to a holding facility or fix, or continue to climb to an MSA; or
 - (v) as directed by ATS.

When the missed approach procedure is commenced on the 'downwind' leg of the circling manoeuvre, an 'S' turn may be undertaken to align the aeroplane on the initial instrument approach missed approach path, provided the aeroplane remains within the protected circling area.

The pilot-in-command should be responsible for ensuring adequate terrain clearance during the above-stipulated manoeuvres, particularly during the execution of a missed approach initiated by ATS.

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- (6) Because the circling manoeuvre may be accomplished in more than one direction, different patterns will be required to establish the aeroplane on the prescribed missed approach course, depending on its position at the time visual reference is lost. In particular, all turns are to be in the prescribed direction if this is restricted, e.g. to the west/east (left or right hand) to remain within the protected circling area.
 - (7) If a missed approach procedure is published for a particular runway onto which the aeroplane is conducting a circling approach and the aeroplane has commenced a manoeuvre to align with the runway, the missed approach for this direction may be accomplished. The ATS unit should be informed of the intention to fly the published missed approach procedure for that particular runway.
 - (8) The pilot-in-command should advise ATS when any missed approach procedure has been commenced, the height/altitude the aeroplane is climbing to and the position the aeroplane is proceeding towards and/or heading the aeroplane is established on.

NCO.OP.113 Aerodrome operating minima — onshore circling operations with helicopters

The MDH for an onshore circling operation with helicopters shall not be lower than 250 ft and the meteorological visibility not less than 800 m.

NCO.OP.115 Departure and approach procedures — aeroplanes and helicopters

- (a) The pilot-in-command shall use the departure and approach procedures established by the State of the aerodrome, if such procedures have been published for the runway or FATO to be used.
- (b) The pilot-in-command may deviate from a published departure route, arrival route or approach procedure:
 - (1) provided obstacle clearance criteria can be observed, full account is taken of the operating conditions and any ATC clearance is adhered to; or
 - (2) when being radar-vectorred by an ATC unit.

NCO.OP.120 Noise abatement procedures — aeroplanes, helicopters and powered sailplanes

The pilot-in-command shall take into account published noise abatement procedures to minimise the effect of aircraft noise while ensuring that safety has priority over noise abatement.

NCO.OP.121 Noise abatement procedures — balloons

The pilot-in-command shall take into account operating procedures to minimise the effect of heating-system noise while ensuring that safety has priority over noise abatement.

NCO.OP.125 Fuel and oil supply — aeroplanes

- (a) The pilot-in-command shall only commence a flight if the aeroplane carries sufficient fuel and oil for the following:
 - (1) for visual flight rules (VFR) flights:
 - (i) by day, taking-off and landing at the same aerodrome/landing site and always remaining in sight of that aerodrome/landing site, to fly the intended route and thereafter for at least 10 minutes at normal cruising altitude;
 - (ii) by day, to fly to the aerodrome of intended landing and thereafter to fly for at least 30 minutes at normal cruising altitude; or
 - (iii) by night, to fly to the aerodrome of intended landing and thereafter to fly for at least 45 minutes at normal cruising altitude;
 - (2) for IFR flights:
 - (i) when no destination alternate is required, to fly to the aerodrome of intended landing and thereafter to fly for at least 45 minutes at normal cruising altitude; or
 - (ii) when a destination alternate is required, to fly to the aerodrome of intended landing, to an alternate aerodrome and thereafter to fly for at least 45 minutes at normal cruising altitude.
- (b) In computing the fuel required including to provide for contingency, the following shall be taken into consideration:
 - (1) forecast meteorological conditions;

- (2) anticipated ATC routings and traffic delays;
 - (3) procedures for loss of pressurisation or failure of one engine while en-route, where applicable; and
 - (4) any other condition that may delay the landing of the aeroplane or increase fuel and/or oil consumption.
- (c) Nothing shall preclude amendment of a flight plan in-flight, in order to re-plan the flight to another destination, provided that all requirements can be complied with from the point where the flight is re-planned.

NCO.OP.126 Fuel and oil supply — helicopters

- (a) The pilot-in-command shall only commence a flight if the helicopter carries sufficient fuel and oil for the following:
- (1) for VFR flights, to fly to the aerodrome/operating site of intended landing and thereafter to fly for at least 20 minutes at best-range-speed; and
 - (2) for IFR flights:
 - (i) when no alternate is required or no weather-permissible alternate aerodrome is available, to fly to the aerodrome/operating site of intended landing, and thereafter to fly for 30 minutes at holding speed at 450 m (1 500 ft) above the destination aerodrome/operating site under standard temperature conditions and approach and land; or
 - (ii) when an alternate is required, to fly to and execute an approach and a missed approach at the aerodrome/operating site of intended landing, and thereafter:
 - (A) to fly to the specified alternate; and
 - (B) to fly for 30 minutes at holding speed at 450 m (1 500 ft) above the alternate aerodrome/operating site under standard temperature conditions and approach and land.
- (b) In computing the fuel required including to provide for contingency, the following shall be taken into consideration:
- (1) forecast meteorological conditions;
 - (2) anticipated ATC routings and traffic delays;
 - (3) procedures for loss of pressurisation or failure of one engine while en-route, where applicable; and
 - (4) any other condition that may delay the landing of the aircraft or increase fuel and/or oil consumption.
- (c) Nothing shall preclude amendment of a flight plan in-flight, in order to re-plan the flight to another destination, provided that all requirements can be complied with from the point where the flight is re-planned.

NCO.OP.127 Fuel and ballast supply and planning — balloons

- (a) The pilot-in-command shall only commence a flight if the reserve fuel or ballast is sufficient for 30 minutes of flight.

- (b) Fuel or ballast supply calculations shall be based upon at least the following operating conditions under which the flight is to be conducted:
- (1) data provided by the balloon manufacturer;
 - (2) anticipated masses;
 - (3) expected meteorological conditions; and
 - (4) air navigation services provider procedures and restrictions.

NCO.OP.130 Passenger briefing

The pilot-in-command shall ensure that before or, where appropriate, during the flight, passengers are given a briefing on emergency equipment and procedures.

AMC1 NCO.OP.130 Passenger briefing**GENERAL**

- (a) Except for sailplanes and balloons, the briefing should include the locations and use of seat belts and if applicable:
- (1) emergency exits;
 - (2) passenger emergency briefing cards;
 - (3) life-jackets;
 - (4) oxygen dispensing equipment;
 - (5) life rafts; and
 - (6) other emergency equipment provided for individual passenger use.
- (b) The briefing should also include the location and general manner of use of the principal emergency equipment carried for collective use.

SAILPLANES

- (c) The briefing should include the locations and use of seat belts and if applicable:
- (1) emergency canopy opening;
 - (2) use of the parachute;
 - (3) oxygen dispensing equipment;
 - (4) passenger emergency briefing cards; and
 - (5) other emergency equipment provided for individual passenger use.

BALLOONS

- (d) Passengers should be given a verbal briefing and demonstration about safety matters in such a way that the information is easily retained and reproduced during the landing and in the case of an emergency situation.
- (e) The briefing/demonstration should contain the following items:
- (1) use of landing hand-holds;
 - (2) use of oxygen dispensing equipment;

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- (3) other emergency equipment provided for individual passenger use, if applicable;
 - (4) wearing of suitable clothing;
 - (5) smoking regulations and the use of portable electronic devices;
 - (6) stowage of baggage;
 - (7) importance to remain inside the basket at all times, particularly after landing;
 - (8) landing positions to be assumed to minimise the effect of the impact upon an emergency landing; and
 - (9) safe transport of the balloon on the ground after landing.
- (f) Part or all of the verbal briefing may be provided additionally by a safety briefing card on which pictorial instructions indicate the correct landing position.
 - (g) Before take-off the correct landing position should be demonstrated.
 - (h) Before commencing the landing phase, passengers should be required to practice the correct landing position.

NCO.OP.135 Flight preparation

- (a) Before commencing a flight, the pilot-in-command shall ascertain by every reasonable means available that the ground and/or water facilities including communication facilities and navigation aids available and directly required on such flight, for the safe operation of the aircraft, are adequate for the type of operation under which the flight is to be conducted.
- (b) Before commencing a flight, the pilot-in-command shall be familiar with all available meteorological information appropriate to the intended flight. Preparation for a flight away from the vicinity of the place of departure, and for every flight under IFR, shall include:
 - (1) a study of available current weather reports and forecasts; and
 - (2) the planning of an alternative course of action to provide for the eventuality that the flight cannot be completed as planned, because of weather conditions.

NCO.OP.140 Destination alternate aerodromes — aeroplanes

For IFR flights, the pilot-in-command shall specify at least one weather-permissible destination alternate aerodrome in the flight plan, unless:

- (a) the available current meteorological information indicates that, for the period from 1 hour before until 1 hour after the estimated time of arrival, or from the actual time of departure to 1 hour after the estimated time of arrival, whichever is the shorter period, the approach and landing may be made under visual meteorological conditions (VMC); or
- (b) the place of intended landing is isolated and:
 - (1) an instrument approach procedure is prescribed for the aerodrome of intended landing; and
 - (2) available current meteorological information indicates that the following meteorological conditions will exist from 2 hours before to 2 hours after the estimated time of arrival:
 - (i) a cloud base of at least 300 m (1 000 ft) above the minimum associated with the instrument approach procedure; and
 - (ii) visibility of at least 5,5 km or of 4 km more than the minimum associated with the procedure.

NCO.OP.141 Destination alternate aerodromes — helicopters

For IFR flights, the pilot-in-command shall specify at least one weather-permissible destination alternate aerodrome in the flight plan, unless:

- (a) an instrument approach procedure is prescribed for the aerodrome of intended landing and the available current meteorological information indicates that the following meteorological conditions will exist from 2 hours before to 2 hours after the estimated time of arrival, or from the actual time of departure to 2 hours after the estimated time of arrival, whichever is the shorter period:
 - (1) a cloud base of at least 120 m (400 ft) above the minimum associated with the instrument approach procedure; and
 - (2) visibility of at least 1 500 m more than the minimum associated with the procedure; or
- (b) the place of intended landing is isolated and:
 - (1) an instrument approach procedure is prescribed for the aerodrome of intended landing;

- (2) available current meteorological information indicates that the following meteorological conditions will exist from 2 hours before to 2 hours after the estimated time of arrival:
 - (i) the cloud base is at least 120 m (400 ft) above the minimum associated with the instrument approach procedure;
 - (ii) visibility is at least 1 500 m more than the minimum associated with the procedure; and
- (3) a point of no return (PNR) is determined in case of an offshore destination.

NCO.OP.145 Refuelling with passengers embarking, on board or disembarking

- (a) The aircraft shall not be refuelled with aviation gasoline (AVGAS) or wide-cut type fuel or a mixture of these types of fuel, when passengers are embarking, on board or disembarking.
- (b) For all other types of fuel, the aircraft shall not be refuelled when passengers are embarking, on board or disembarking, unless it is attended by the pilot-in-command or other qualified personnel ready to initiate and direct an evacuation of the aircraft by the most practical and expeditious means available.

AMC1 NCO.OP.145 Refuelling with passengers embarking, on board or disembarking**OPERATIONAL PROCEDURES**

If passengers are on board when refuelling with other than aviation gasoline (AVGAS), wide-cut type fuel or a mixture of these types of fuel, the following precautions should be taken:

- (a) the pilot-in-command should remain at a location during fuelling operations with passengers on board which allows him to handle emergency procedures concerning fire protection and fire-fighting and initiate and direct an evacuation;
- (b) personnel and passengers should be warned that refuelling will take place;
- (c) passengers should be instructed to unfasten their seat belts and refrain from smoking; and
- (d) if the presence of fuel vapour is detected inside the aircraft, or any other hazard arises during refuelling, fuelling should be stopped immediately.

NCO.OP.150 Carriage of passengers

Except for balloons, the pilot-in-command shall ensure that, prior to and during taxiing, take-off and landing, and whenever deemed necessary in the interest of safety, each passenger on board occupies a seat or berth and has his/her safety belt or restraint device properly secured.

AMC1 NCO.OP.150 Carriage of passengers**CARRIAGE OF CHILDREN AND PERSONS WITH REDUCED MOBILITY — BALLOONS**

The pilot-in-command may exclude children and/or persons with reduced mobility (PRM)s from transportation in a balloon, when:

- (a) their presence may impede:
 - (1) the crew in their duties;
 - (2) access to emergency equipment; or
 - (3) the emergency evacuation of the balloon;and/or
- (b) those persons are:
 - (1) unable to take a proper brace position; or
 - (2) smaller than the inner height of the basket wall.

NCO.OP.155 Smoking on board — aeroplanes and helicopters

The pilot-in-command shall not allow smoking on board:

- (a) whenever considered necessary in the interest of safety; and
- (b) during refuelling of the aircraft.

NCO.OP.156 Smoking on board — sailplanes and balloons

No person shall be allowed to smoke on board a sailplane or balloon.

NCO.OP.160 Meteorological conditions

- (a) The pilot-in-command shall only commence or continue a VFR flight if the latest available meteorological information indicates that the weather conditions along the route and at the intended destination at the estimated time of use will be at or above the applicable VFR operating minima.
- (b) The pilot-in-command shall only commence or continue an IFR flight towards the planned destination aerodrome if the latest available meteorological information indicates that, at the estimated time of arrival, the weather conditions at the destination or at least one destination alternate aerodrome are at or above the applicable aerodrome operating minima.
- (c) If a flight contains VFR and IFR segments, the meteorological information referred to in (a) and (b) shall be applicable as far as relevant.

AMC1 NCO.OP.160 Meteorological conditions**APPLICATION OF AERODROME FORECASTS (TAF & TREND) — AEROPLANES AND HELICOPTERS**

Where a terminal area forecast (TAF) or meteorological aerodrome or aeronautical report (METAR) with landing forecast (TREND) is used as forecast, the following criteria should be used:

- (a) From the start of a TAF validity period up to the time of applicability of the first subsequent 'FM...' or 'BECMG' or, if no 'FM' or 'BECMG' is given, up to the end of the validity period of the TAF, the prevailing weather conditions forecast in the initial part of the TAF should be applied.
- (b) From the time of observation of a METAR up to the time of applicability of the first subsequent 'FM...' or 'BECMG' or, if no 'FM' or 'BECMG' is given, up to the end of the validity period of the TREND, the prevailing weather conditions forecast in the METAR should be applied.
- (c) Following FM (alone) or BECMG AT, any specified change should be applied from the time of the change.
- (d) Following BECMG (alone), BECMG FM, BECMG TL, BECMG FM TL:
 - (1) in the case of deterioration, any specified change should be applied from the start of the change; and
 - (2) in the case of improvement, any specified change should be applied from the end of the change.
- (e) In a period indicated by TEMPO (alone), TEMPO FM, TEMPO TL, TEMPO FM TL, PROB30/40 (alone):
 - (1) deteriorations associated with persistent conditions in connection with e.g. haze, mist, fog, dust/sandstorm, continuous precipitation should be applied;

- (2) deteriorations associated with transient/showery conditions in connection with short-lived weather phenomena, e.g. thunderstorms, showers may be ignored; and
 - (3) improvements should in all cases be disregarded.
- (f) In a period indicated by PROB30/40 TEMPO:
- (1) deteriorations may be disregarded; and
 - (2) improvements should be disregarded.

Note: Abbreviations used in the context of this AMC are as follows:

FM: from

BECMG: becoming

AT: at

TL: till

TEMPO: temporarily

PROB: probability

GM1 NCO.OP.160 Meteorological conditions

CONTINUATION OF A FLIGHT — AEROPLANES AND HELICOPTERS

In the case of in-flight re-planning, continuation of a flight refers to the point from which a revised flight plan applies.

GM2 NCO.OP.160 Meteorological conditions

EVALUATION OF METEOROLOGICAL CONDITIONS — AEROPLANES AND HELICOPTERS

It is recommended that the pilot-in-command carefully evaluates the available meteorological information relevant to the proposed flight, such as applicable surface observations, winds, temperatures aloft, terminal and area forecasts, air meteorological information reports (AIRMETs), significant meteorological information (SIGMET) and pilot reports. The ultimate decision whether, when, and where to make the flight rests with the pilot-in-command. The pilot-in-command also should continue to re-evaluate changing weather conditions.

NCO.OP.165 Ice and other contaminants — ground procedures

The pilot-in-command shall only commence take-off if the aircraft is clear of any deposit that might adversely affect the performance or controllability of the aircraft, except as permitted in the AFM.

NCO.OP.170 Ice and other contaminants — flight procedures

- (a) The pilot-in-command shall only commence a flight or intentionally fly into expected or actual icing conditions if the aircraft is certified and equipped to cope with such conditions as referred to in 2.a.5 of Annex IV to Regulation (EC) No 216/2008.
- (b) If icing exceeds the intensity of icing for which the aircraft is certified or if an aircraft not certified for flight in known icing conditions encounters icing, the pilot-in-command shall exit the icing conditions without delay, by a change of level and/or route, and if necessary by declaring an emergency to ATC.

GM1 NCO.OP.170(b) Ice and other contaminants — flight procedures**KNOWN ICING CONDITIONS**

Known icing conditions are conditions where actual ice is observed visually to be on the aircraft by the pilot or identified by on-board sensors.

NCO.OP.175 Take-off conditions — aeroplanes and helicopters

Before commencing take-off, the pilot-in-command shall be satisfied that:

- (a) according to the information available, the weather at the aerodrome or operating site and the condition of the runway or FATO intended to be used would not prevent a safe take-off and departure; and
- (b) applicable aerodrome operating minima will be complied with.

NCO.OP.176 Take-off conditions — balloons

Before commencing take-off, the pilot-in-command of a balloon shall be satisfied that, according to the information available, the weather at the operating site or aerodrome would not prevent a safe take-off and departure.

AMC1 NCO.OP.176 Take-off conditions — balloons**FACILITIES AT THE TAKE-OFF SITE**

At the balloon take-off site a means of assessing the wind direction and wind speed should be available to the pilot-in-command.

NCO.OP.180 Simulated situations in flight

- (a) The pilot-in-command shall, when carrying passengers or cargo, not simulate:
- (1) situations that require the application of abnormal or emergency procedures; or
 - (2) flight in instrument meteorological conditions (IMC).
- (b) Notwithstanding (a), when training flights are conducted by an approved training organisation, such situations may be simulated with student pilots on-board.

NCO.OP.185 In-flight fuel management

The pilot-in-command shall check at regular intervals that the amount of usable fuel or, for balloons, ballast remaining in flight is not less than the fuel or ballast required to proceed to a weather-permissible aerodrome or operating site and the planned reserve fuel as required by NCO.OP.125, NCO.OP.126 or NCO.OP.127.

NCO.OP.190 Use of supplemental oxygen

The pilot-in-command shall ensure that he/she and flight crew members engaged in performing duties essential to the safe operation of an aircraft in flight use supplemental oxygen continuously whenever the cabin altitude exceeds 10 000 ft for a period of more than 30 minutes and whenever the cabin altitude exceeds 13 000 ft.

NCO.OP.195 Ground proximity detection

When undue proximity to the ground is detected by the pilot-in-command or by a ground proximity warning system, the pilot-in-command shall take corrective action immediately in order to establish safe flight conditions.

NCO.OP.200 Airborne collision avoidance system (ACAS II)

When ACAS II is used, operational procedures and training shall be in accordance with Regulation (EU) No 1332/2011.

NCO.OP.205 Approach and landing conditions — aeroplanes and helicopters

Before commencing an approach to land, the pilot-in-command shall be satisfied that, according to the information available, the weather at the aerodrome or the operating site and the condition of the runway or FATO intended to be used would not prevent a safe approach, landing or missed approach.

AMC1 NCO.OP.205 Approach and landing conditions — aeroplanes and helicopters

LANDING DISTANCE/FATO SUITABILITY

The in-flight determination of the landing distance/FATO suitability should be based on the latest available meteorological report.

NCO.OP.210 Commencement and continuation of approach — aeroplanes and helicopters

- (a) The pilot-in-command may commence an instrument approach regardless of the reported runway visual range/visibility (RVR/VIS).
- (b) If the reported RVR/VIS is less than the applicable minimum, the approach shall not be continued:
 - (1) below 1 000 ft above the aerodrome; or
 - (2) into the final approach segment in the case where the decision altitude/height (DA/H) or minimum descent altitude/height (MDA/H) is more than 1 000 ft above the aerodrome.
- (c) Where the RVR is not available, RVR values may be derived by converting the reported visibility.
- (d) If, after passing 1 000 ft above the aerodrome, the reported RVR/VIS falls below the applicable minimum, the approach may be continued to DA/H or MDA/H.
- (e) The approach may be continued below DA/H or MDA/H and the landing may be completed provided that the visual reference adequate for the type of approach operation and for the intended runway is established at the DA/H or MDA/H and is maintained.
- (f) The touchdown zone RVR shall always be controlling.

AMC1 NCO.OP.210 Commencement and continuation of approach — aeroplanes and helicopters

VISUAL REFERENCES FOR NPA, APV AND CAT I OPERATIONS

- (a) At DH or MDH, at least one of the visual references specified below should be distinctly visible and identifiable to the pilot:
 - (1) elements of the approach lighting 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;
 - (9) FATO/runway edge lights; or
 - (10) other visual references specified in the operations manual.

NCO.OP.215 Operational limitations — hot-air balloons

- (a) A hot-air balloon shall not land during night, except in emergency.
- (b) A hot-air balloon may take off during night, provided sufficient fuel is carried for a landing during day.

GM1 NCO.OP.215 Operational limitations — hot-air balloons**AVOIDANCE OF NIGHT LANDING**

The intent of rule is to ensure that when the balloon takes off during night, sufficient fuel is on board for landing under VFR by day.

The risk of collision with overhead lines is considerable and cannot be overstated. The risk is considerably increased during night flights in conditions of failing light and visibility when there is increasing pressure to land. A number of incidents have occurred in the late evening in just such conditions, and may have been avoided had an earlier landing been planned. Night landings should therefore be avoided by taking appropriate measures, including a larger quantity of fuel and/or additional safety equipment.

SUBPART C: AIRCRAFT PERFORMANCE AND OPERATING LIMITATIONS

NCO.POL.100 Operating limitations — all aircraft

- (a) During any phase of operation, the loading, the mass and, except for balloons, the centre of gravity (CG) position of the aircraft shall comply with any limitation specified in the AFM, or equivalent document.
- (b) Placards, listings, instrument markings, or combinations thereof, containing those operating limitations prescribed by the AFM for visual presentation, shall be displayed in the aircraft.

NCO.POL.105 Weighing

- (a) The operator shall ensure that the mass and, except for balloons, the CG of the aircraft have been established by actual weighing prior to initial entry into service. The accumulated effects of modifications and repairs on the mass and balance shall be accounted for and properly documented. Such information shall be made available to the pilot-in-command. The aircraft shall be reweighed if the effect of modifications on the mass and balance is not accurately known.
- (b) The weighing shall be accomplished:
 - (1) for aeroplanes and helicopters, by the manufacturer of the aircraft or by an approved maintenance organisation; and
 - (2) for sailplanes and balloons, by the manufacturer of the aircraft or in accordance with Commission Regulation (EC) No 2042/2003, as applicable.

GM1 NCO.POL.105 Weighing

GENERAL

- (a) New aircraft that have been weighed at the factory may be placed into operation without reweighing if the mass records and, except for balloons, balance records have been adjusted for alterations or modifications to the aircraft. Aircraft transferred from one EU operator to another EU operator do not have to be weighed prior to use by the receiving operator, unless the mass and balance cannot be accurately established by calculation.
- (b) For aircraft other than balloons, the mass and centre of gravity (CG) position should be revised whenever the cumulative changes to the dry operating mass exceed ± 0.5 % of the maximum landing mass or, for aeroplanes, the cumulative change in CG position exceeds 0.5 % of the mean aerodynamic chord. This may be done by weighing the aircraft or by calculation. If the AFM requires to record changes to mass and CG position below these thresholds, or to record changes in any case, and make them known to the pilot-in-command, mass and CG position should be revised accordingly and made known to the pilot-in-command.
- (c) The initial empty mass for a balloon is the balloon empty mass determined by a weighing performed by the manufacturer of the balloon before the initial entry into service.
- (d) The mass of a balloon should be revised whenever the cumulative changes to the balloon empty mass due to modifications or repairs exceed ± 10 % of the initial empty mass. This may be done by weighing the balloon or by calculation.

NCO.POL.110 Performance — general

The pilot-in-command shall only operate the aircraft if the performance is adequate to comply with the applicable rules of the air and any other restrictions applicable to the flight, the airspace or the aerodromes or operating sites used, taking into account the charting accuracy of any charts and maps used.

SUBPART D: INSTRUMENTS, DATA AND EQUIPMENT

SECTION 1 Aeroplanes

NCO.IDE.A.100 Instruments and equipment — general

- (a) Instruments and equipment required by this Subpart shall be approved in accordance with the applicable airworthiness requirements if they are:
 - (1) used by the flight crew to control the flight path;
 - (2) used to comply with NCO.IDE.A.190;
 - (3) used to comply with NCO.IDE.A.195; or
 - (4) installed in the aeroplane.
- (b) The following items, when required by this Subpart, do not need an equipment approval:
 - (1) spare fuses;
 - (2) independent portable lights;
 - (3) an accurate time piece;
 - (4) first-aid kit;
 - (5) survival and signalling equipment;
 - (6) sea anchor and equipment for mooring; and
 - (7) child restraint device.
- (c) Instruments and equipment not required by this Subpart as well as any other equipment that is not required by other applicable Annexes, but is carried on a flight, shall comply with the following:
 - (1) the information provided by these instruments or equipment shall not be used by the flight crew to comply with Annex I to Regulation (EC) No 216/2008 or NCO.IDE.A.190 and NCO.IDE.A.195; and
 - (2) the instruments and equipment shall not affect the airworthiness of the aeroplane, even in the case of failures or malfunction.
- (d) Instruments and equipment shall be readily operable or accessible from the station where the flight crew member that needs to use it is seated.
- (e) All required emergency equipment shall be easily accessible for immediate use.

GM1 NCO.IDE.A.100(a) Instruments and equipment — general**APPLICABLE AIRWORTHINESS REQUIREMENTS**

The applicable airworthiness requirements for approval of instruments and equipment required by this Part are the following:

- (a) Regulation (EU) No 748/2012⁴ for aeroplanes registered in the EU; and
- (b) Airworthiness requirements of the State of registry for aeroplanes registered outside the EU.

GM1 NCO.IDE.A.100(b) Instruments and equipment — general**REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS**

The functionality of non-installed instruments and equipment required by this Subpart and that do not need an equipment approval, as listed in NCO.IDE.A.100(b), should be checked against recognised industry standards appropriate to the intended purpose. The operator is responsible for ensuring the maintenance of these instruments and equipment.

GM1 NCO.IDE.A.100(c) Instruments and equipment — general**NOT REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS, BUT ARE CARRIED ON A FLIGHT**

- (a) The provision of this paragraph does not exempt any installed instrument or item of equipment from complying with the applicable airworthiness requirements. In this case, the installation should be approved as required in the applicable airworthiness requirements and should comply with the applicable Certification Specifications.
- (b) The failure of additional non-installed instruments or equipment not required by this Part or by the applicable airworthiness requirements or any applicable airspace requirements should not adversely affect the airworthiness and/or the safe operation of the aeroplane. Examples may be the following:
 - (1) portable electronic flight bag (EFB);
 - (2) portable electronic devices carried by crew members; and
 - (3) non-installed passenger entertainment equipment.

⁴ Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations, *OJ L 224, 21.8.2012, p. 1*.

NCO.IDE.A.105 Minimum equipment for flight

A flight shall not be commenced when any of the aeroplane instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless:

- (a) the aeroplane is operated in accordance with the MEL, if established; or
- (b) the aeroplane is subject to a permit to fly issued in accordance with the applicable airworthiness requirements.

NCO.IDE.A.110 Spare electrical fuses

Aeroplanes shall be equipped with spare electrical fuses, of the ratings required for complete circuit protection, for replacement of those fuses that are allowed to be replaced in flight.

GM1 NCO.IDE.A.110 Spare electrical fuses**FUSES**

A spare electrical fuse means a replaceable fuse in the flight crew compartment, not an automatic circuit breaker or circuit breakers in the electric compartments.

NCO.IDE.A.115 Operating lights

Aeroplanes operated at night shall be equipped with:

- (a) an anti-collision light system;
- (b) navigation/position lights;
- (c) a landing light;
- (d) lighting supplied from the aeroplane's electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the aeroplane;
- (e) lighting supplied from the aeroplane's electrical system to provide illumination in all passenger compartments;
- (f) an independent portable light for each crew member station; and
- (g) lights to conform with the International Regulations for Preventing Collisions at Sea if the aeroplane is operated as a seaplane.

NCO.IDE.A.120 Operations under VFR — flight and navigational instruments and associated equipment

- (a) Aeroplanes operated under VFR by day shall be equipped with a means of measuring and displaying the following:
 - (1) magnetic heading;
 - (2) time, in hours, minutes and seconds;
 - (3) pressure altitude;
 - (4) indicated airspeed; and
 - (5) Mach number, whenever speed limitations are expressed in terms of Mach number.
- (b) Aeroplanes operated under visual meteorological conditions (VMC) at night, or in conditions where the aeroplane cannot be maintained in a desired flight path without reference to one or more additional instruments, shall be, in addition to (a), equipped with:
 - (1) a means of measuring and displaying the following:
 - (i) turn and slip;
 - (ii) attitude;
 - (iii) vertical speed; and
 - (iv) stabilised heading;and
 - (2) a means of indicating when the supply of power to the gyroscopic instruments is not adequate.
- (c) Aeroplanes operated in conditions where they cannot be maintained in a desired flight path without reference to one or more additional instruments, shall be, in addition to (a) and (b), equipped with a means of preventing malfunction of the airspeed indicating system required in (a)(4) due to condensation or icing.

AMC1 NCO.IDE.A.120&NCO.IDE.A.125 Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment**INTEGRATED INSTRUMENTS**

- (a) Individual equipment requirements may be met by combinations of instruments, by integrated flight systems or by a combination of parameters on electronic displays. The information so available to each required pilot should not be less than that required in the applicable operational requirements, and the equivalent safety of the installation should be approved during type certification of the aeroplane for the intended type of operation.
- (b) The means of measuring and indicating turn and slip, aeroplane attitude and stabilised aeroplane heading may be met by combinations of instruments or by integrated flight director systems, provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

AMC2 NCO.IDE.A.120 Operations under VFR — flight and navigational instruments and associated equipment**LOCAL FLIGHTS**

For flights that do not exceed 60 minutes duration, that take off and land at the same aerodrome, and that remain within 50 NM of that aerodrome, an equivalent means of complying with NCO.IDE.A.120 (b)(1)(i), (b)(1)(ii) may be:

- (a) a turn and slip indicator;
- (b) a turn co-ordinator; or
- (c) both an attitude indicator and a slip indicator.

GM1 NCO.IDE.A.120 Operations under VFR — flight and navigational instruments and associated equipment**SLIP INDICATION**

Aeroplanes should be equipped with a means of measuring and displaying slip.

NCO.IDE.A.125 Operations under IFR — flight and navigational instruments and associated equipment

Aeroplanes operated under IFR shall be equipped with:

- (a) a means of measuring and displaying the following:
 - (1) magnetic heading;
 - (2) time in hours, minutes and seconds;
 - (3) pressure altitude;
 - (4) indicated airspeed;
 - (5) vertical speed;
 - (6) turn and slip;
 - (7) attitude;
 - (8) stabilised heading;
 - (9) outside air temperature; and
 - (10) Mach number, whenever speed limitations are expressed in terms of Mach number;
- (b) a means of indicating when the supply of power to the gyroscopic instruments is not adequate; and
- (c) a means of preventing malfunction of the airspeed indicating system required in (a)(4) due to condensation or icing.

GM1 NCO.IDE.A.125 Operations under IFR — flight and navigational instruments and associated equipment**ALTERNATE SOURCE OF STATIC PRESSURE**

Aeroplanes should be equipped with an alternate source of static pressure.

AMC1 NCO.IDE.A.120(a)(1)&NCO.IDE.A.125(a)(1) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment**MEANS OF MEASURING AND DISPLAYING MAGNETIC HEADING**

The means of measuring and displaying magnetic direction should be a magnetic compass or equivalent.

AMC1 NCO.IDE.A.120(a)(2)&NCO.IDE.A.125(a)(2) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment**MEANS OF MEASURING AND DISPLAYING THE TIME**

A means of measuring and displaying the time in hours, minutes and seconds may be a wrist watch capable of the same functions.

AMC1 NCO.IDE.A.120(a)(3)&NCO.IDE.A.125(a)(3) Operations under VFR operations & operations under IFR — flight and navigational instruments and associated equipment**CALIBRATION OF THE MEANS OF MEASURING AND DISPLAYING PRESSURE ALTITUDE**

The instrument measuring and displaying pressure altitude should be of a sensitive type calibrated in feet (ft), with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight.

GM1 NCO.IDE.A.125(a)(3) Operations under IFR — flight and navigational instruments and associated equipment**ALTIMETERS**

Altimeters with counter drum-pointer or equivalent presentation are considered to be less susceptible to misinterpretation for aeroplanes operating above 10 000 ft.

AMC1 NCO.IDE.A.120(a)(4)&NCO.IDE.A.125(a)(4) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment**CALIBRATION OF THE INSTRUMENT INDICATING AIRSPEED**

- (a) The instrument indicating airspeed should be calibrated in knots (kt).
- (b) In the case of aeroplanes with a maximum certified take-off mass (MCTOM) below 2 000 kg, calibration in kilometres per hour (kph) or in miles per hour (mph) is acceptable when such units are used in the AFM.

AMC1 NCO.IDE.A.120(c)&NCO.IDE.A.125(c) Operations under IFR — flight and navigational instruments and associated equipment**MEANS OF PREVENTING MALFUNCTION DUE TO CONDENSATION OR ICING**

The means of preventing malfunction due to either condensation or icing of the airspeed indicating system should be a heated pitot tube or equivalent.

AMC1 NCO.IDE.A.125(a)(9) Operations under IFR — flight and navigational instruments and associated equipment**MEANS OF DISPLAYING OUTSIDE AIR TEMPERATURE**

- (a) The means of displaying outside air temperature should be calibrated in degrees Celsius.
- (b) In the case of aeroplanes with a maximum certified take-off mass (MCTOM) below 2 000 kg, calibration in degrees Fahrenheit is acceptable, when such unit is used in the AFM.
- (c) The means of displaying outside air temperature may be an air temperature indicator that provides indications that are convertible to outside air temperature.

NCO.IDE.A.130 Terrain awareness warning system (TAWS)

Turbine-powered aeroplanes certified for a maximum passenger seating configuration of more than nine shall be equipped with a TAWS that meets the requirements for:

- (a) class A equipment, as specified in an acceptable standard, in the case of aeroplanes for which the individual certificate of airworthiness (CofA) was first issued after 1 January 2011; or
- (b) class B equipment, as specified in an acceptable standard, in the case of aeroplanes for which the individual CofA was first issued on or before 1 January 2011.

AMC1 NCO.IDE.A.130 Terrain awareness warning system (TAWS)**EXCESSIVE DOWNWARDS GLIDESLOPE DEVIATION WARNING FOR CLASS A TAWS**

The requirement for a Class A TAWS to provide a warning to the flight crew for excessive downwards glideslope deviation should apply to all final approach glideslopes with angular vertical navigation (VNAV) guidance, whether provided by the instrument landing system (ILS), microwave landing system (MLS), satellite-based augmentation system approach procedure with vertical guidance (SBAS APV (localiser performance with vertical guidance approach LPV)), ground-based augmentation system (GBAS (GPS landing system, GLS)) or any other systems providing similar guidance. The same requirement should not apply to systems providing vertical guidance based on barometric VNAV.

GM1 NCO.IDE.A.130 Terrain awareness warning system (TAWS)**ACCEPTABLE STANDARD FOR TAWS**

An acceptable standard for Class A and Class B TAWS may be the applicable European Technical Standards Order (ETSO) issued by the Agency or equivalent.

NCO.IDE.A.135 Flight crew interphone system

Aeroplanes operated by more than one flight crew member shall be equipped with a flight crew interphone system, including headsets and microphones for use by all flight crew members.

AMC1 NCO.IDE.A.135 Flight crew interphone system**GENERAL**

- (a) The flight crew interphone system should not be of a handheld type.
- (b) A headset consists of a communication device that includes two earphones to receive and a microphone to transmit audio signals to the aeroplane's communication system. To comply with the minimum performance requirements, the earphones and microphone should match the communication system's characteristics and the flight crew compartment environment. The headset should be adequately adjustable in order to fit the pilot's head. Headset boom microphones should be of the noise cancelling type.
- (c) If the intention is to utilise noise cancelling earphones, the pilot-in-command should ensure that the earphones do not attenuate any aural warnings or sounds necessary for alerting the flight crew on matters related to the safe operation of the aeroplane.

GM1 NCO.IDE.A.135 Flight crew interphone system**HEADSET**

The term 'headset' includes any aviation helmet incorporating headphones and microphone worn by a flight crew member.

NCO.IDE.A.140 Seats, seat safety belts, restraint systems and child restraint devices

- (a) Aeroplanes shall be equipped with:
- (1) a seat or berth for each person on board who is aged 24 months or more;
 - (2) a seat belt on each passenger seat and restraining belts for each berth;
 - (3) a child restraint device (CRD) for each person on board younger than 24 months; and
 - (4) a seat belt with upper torso restraint system on each flight crew seat, having a single point release.

AMC1 NCO.IDE.A.140 Seats, seat safety belts, restraint systems and child restraint devices**CHILD RESTRAINT DEVICES (CRDS)**

- (a) A CRD is considered to be acceptable if:
- (1) it is a supplementary loop belt manufactured with the same techniques and the same materials as the approved safety belts; or
 - (2) it complies with (b).
- (b) Provided the CRD can be installed properly on the respective aircraft seat, the following CRDs are considered acceptable:
- (1) CRDs approved for use in aircraft by a competent authority on the basis of a technical standard and marked accordingly.
 - (2) CRDs approved for use in motor vehicles according to the UN standard ECE R 44, -03 or later series of amendments.
 - (3) CRDs approved for use in motor vehicles and aircraft according to Canadian CMVSS 213/213.1.
 - (4) CRDs approved for use in motor vehicles and aircraft according to US FMVSS No 213 and manufactured to these standards on or after February 26, 1985. US approved CRDs manufactured after this date should bear the following labels in red letters:
 - (i) 'THIS CHILD RESTRAINT SYSTEM CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS'; and
 - (ii) 'THIS RESTRAINT IS CERTIFIED FOR USE IN MOTOR VEHICLES AND AIRCRAFT';
 - (5) CRDs qualified for use in aircraft according to the German 'Qualification Procedure for Child Restraint Systems for Use in Aircraft' (TÜV Doc.: TÜV/958-01/2001); and
 - (6) Devices approved for use in cars, manufactured and tested to standards equivalent to those listed above. The device should be marked with an associated qualification sign, which shows the name of the qualification organisation and a specific identification number, related to the associated qualification project. The qualifying organisation should be a competent and independent organisation that is acceptable to the competent authority.
- (c) Location
- (1) Forward facing CRDs may be installed on both forward and rearward facing passenger seats but only when fitted in the same direction as the passenger seat on which they are positioned. Rearward facing CRDs should only be installed on forward facing passenger seats. A CRD may not be installed within the radius of action of an airbag, unless it is

obvious that the airbag is de-activated or it can be demonstrated that there is no negative impact from the airbag.

- (2) An infant in a CRD should be located as near to a floor level exit as feasible.
- (3) An infant in a CRD should not hinder evacuation for any passenger.
- (d) Installation
 - (1) CRDs should only be installed on a suitable aircraft seat with the type of connecting device they are approved or qualified for. E.g., CRDs to be connected by a three point harness only (most rearward facing baby CRDs currently available) should not be attached to an aeroplane seat with a lap belt only; a CRD designed to be attached to a vehicle seat by means of rigid bar lower anchorages (ISO-FIX or US equivalent) only, should only be used on aeroplane seats that are equipped with such connecting devices and should not be attached by the aeroplane seat lap belt. The method of connecting should be the one shown in the manufacturer's instructions provided with each CRD.
 - (2) All safety and installation instructions should be followed carefully by the responsible adult accompanying the infant.
 - (3) If a forward facing CRD with a rigid backrest is to be fastened by a lap belt, the restraint device should be fastened when the backrest of the passenger seat on which it rests is in a reclined position. Thereafter, the backrest is to be positioned upright. This procedure ensures better tightening of the CRD on the aircraft seat if the aircraft seat is reclinable.
 - (4) The buckle of the adult safety belt should be easily accessible for both opening and closing, and should be in line with the seat belt halves (not canted) after tightening.
 - (5) Forward facing restraint devices with an integral harness must not be installed such that the adult safety belt is secured over the infant.
- (e) Operation
 - (1) Each CRD should remain secured to a passenger seat during all phases of flight, unless it is properly stowed when not in use.
 - (2) Where a CRD is adjustable in recline, it should be in an upright position for all occasions when passenger restraint devices are required.

AMC2 NCO.IDE.A.140 Seats, seat safety belts, restraint systems and child restraint devices

UPPER TORSO RESTRAINT SYSTEM

The following systems are deemed to be compliant with the requirement for an upper torso restraint system:

- (a) A seat belt with a diagonal shoulder strap;
- (b) A restraint system having a seat belt and two shoulder straps that may be used independently;
- (c) A restraint system having a seat belt, two shoulder straps and additional straps that may be used independently.

SEAT BELT

A seat belt with diagonal shoulder strap (three anchorage points) is deemed to be compliant with the requirement for a seat belt (two anchorage points).

NCO.IDE.A.145 First-aid kit

- (a) Aeroplanes shall be equipped with a first-aid kit.
- (b) The first-aid kit shall be:
 - (1) readily accessible for use; and
 - (2) kept up-to-date.

AMC1 NCO.IDE.A.145 First-aid kit**CONTENT OF FIRST-AID KITS**

- (a) First-aid kits should be equipped with appropriate and sufficient medications and instrumentation. However, these kits should be amended by the operator according to the characteristics of the operation (scope of operation, flight duration, number and demographics of passengers, etc.).
- (b) The following should be included in the FAKs:
 - (1) bandages (assorted sizes),
 - (2) burns dressings (large and small),
 - (3) wound dressings (large and small),
 - (4) adhesive dressings (assorted sizes),
 - (5) antiseptic wound cleaner,
 - (6) safety scissors,
 - (7) disposable gloves.

AMC2 NCO.IDE.A.145 First-aid kit**MAINTENANCE OF FIRST-AID KIT**

To be kept up-to-date, the first-aid kit should be:

- (a) inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use;
- (b) replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant; and
- (c) replenished after use in-flight at the first opportunity where replacement items are available.

NCO.IDE.A.150 Supplemental oxygen — pressurised aeroplanes

- (a) Pressurised aeroplanes operated at flight altitudes for which the oxygen supply is required in accordance with (b) shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the required oxygen supplies.
- (b) Pressurised aeroplanes operated above flight altitudes at which the pressure altitude in the passenger compartments is above 10 000 ft shall carry enough breathing oxygen to supply:
 - (1) all crew members and:
 - (i) 100 % of the passengers for any period when the cabin pressure altitude exceeds 15 000 ft, but in no case less than 10 minutes' supply;
 - (ii) at least 30 % of the passengers, for any period when, in the event of loss of pressurisation and taking into account the circumstances of the flight, the pressure altitude in the passenger compartment will be between 14 000 ft and 15 000 ft; and
 - (iii) at least 10 % of the passengers for any period in excess of 30 minutes when the pressure altitude in the passenger compartment will be between 10 000 ft and 14 000 ft;
 - and
 - (2) all the occupants of the passenger compartment for no less than 10 minutes, in the case of aeroplanes operated at pressure altitudes above 25 000 ft, or operated below that altitude but under conditions that will not allow them to descend safely to a pressure altitude of 13 000 ft within 4 minutes.
- (c) Pressurised aeroplanes operated at flight altitudes above 25 000 ft shall, in addition, be equipped with a device to provide a warning indication to the flight crew of any loss of pressurisation.

AMC1 NCO.IDE.A.150 Supplemental oxygen — pressurised aeroplanes**DETERMINATION OF OXYGEN**

- (a) In the determination of the amount of oxygen for the routes to be flown, it is assumed that the aeroplane will descend in accordance with the emergency procedures specified in the AFM, without exceeding its operating limitations, to a flight altitude that will allow the flight to be completed safely (i.e. flight altitudes ensuring adequate terrain clearance, navigational accuracy, hazardous weather avoidance, etc.).
- (b) The amount of oxygen should be determined on the basis of cabin pressure altitude, flight duration, and on the assumption that a cabin pressurisation failure will occur at the pressure altitude or point of flight that is most critical from the standpoint of oxygen need.
- (c) Following a cabin pressurisation failure, the cabin pressure altitude should be considered to be the same as the aeroplane pressure altitude, unless it can be demonstrated to the competent authority that no probable failure of the cabin or pressurisation system will result in a cabin pressure altitude equal to the aeroplane pressure altitude. Under these circumstances, the demonstrated maximum cabin pressure altitude may be used as a basis for determination of oxygen supply.

NCO.IDE.A.155 Supplemental oxygen — non-pressurised aeroplanes

- (a) Non-pressurised aeroplanes operated at flight altitudes when the oxygen supply is required in accordance with (b) shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the required oxygen supplies.
- (b) Non-pressurised aeroplanes operated above flight altitudes at which the pressure altitude in the passenger compartments is above 10 000 ft shall carry enough breathing oxygen to supply:
 - (1) all crew members and at least 10 % of the passengers for any period in excess of 30 minutes when the pressure altitude in the passenger compartment will be between 10 000 ft and 13 000 ft; and
 - (2) all crew members and passengers for any period that the pressure altitude in the passenger compartment will be above 13 000 ft.

AMC1 NCO.IDE.A.155 Supplemental oxygen — non-pressurised aeroplanes**DETERMINATION OF OXYGEN**

- (a) In the determination of the amount of oxygen for the routes to be flown, it is assumed that the aeroplane will operate at a flight altitude that will allow the flight to be completed safely (i.e. flight altitudes ensuring adequate terrain clearance, navigational accuracy, hazardous weather avoidance, etc.).
- (b) The amount of oxygen should be determined on the basis of cabin pressure altitude and flight duration.

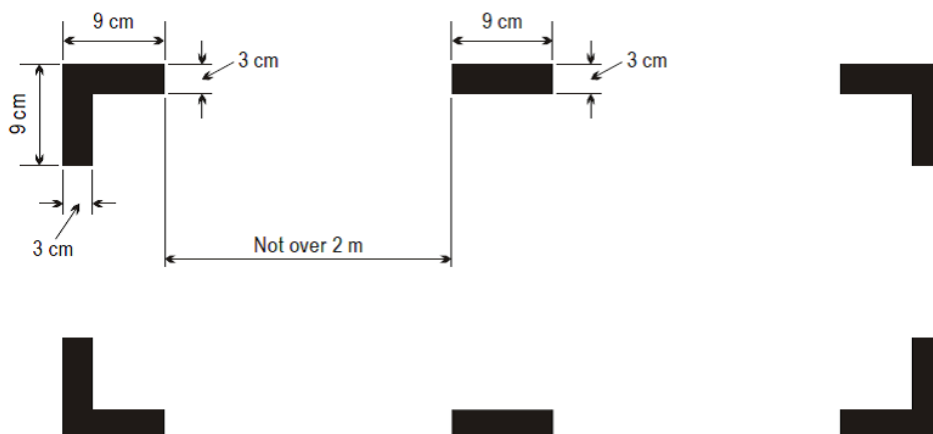
NCO.IDE.A.160 Hand fire extinguishers

- (a) Aeroplanes, except touring motor gliders (TMG) and ELA1 aeroplanes, shall be equipped with at least one hand fire extinguisher:
- (1) in the flight crew compartment; and
 - (2) in each passenger compartment that is separate from the flight crew compartment, except if the compartment is readily accessible to the flight crew.
- (b) The type and quantity of extinguishing agent for the required fire extinguishers shall be suitable for the type of fire likely to occur in the compartment where the extinguisher is intended to be used and to minimise the hazard of toxic gas concentration in compartments occupied by persons.

NCO.IDE.A.165 Marking of break-in points

If areas of the aeroplane's fuselage suitable for break-in by rescue crews in an emergency are marked, such areas shall be marked as shown in Figure 1.

Figure 1

Marking of break-in points**AMC1 NCO.IDE.A.165 Marking of break-in points****MARKINGS — COLOUR AND CORNERS**

- (a) The colour of the markings should be red or yellow and, if necessary, should be outlined in white to contrast with the background.
- (b) If the corner markings are more than 2 m apart, intermediate lines 9 cm x 3 cm should be inserted so that there is no more than 2 m between adjacent markings.

NCO.IDE.A.170 Emergency locator transmitter (ELT)

- (a) Aeroplanes shall be equipped with:
 - (1) an ELT of any type, when first issued with an individual CofA on or before 1 July 2008;
 - (2) an automatic ELT, when first issued with an individual CofA after 1 July 2008; or
 - (3) a survival ELT (ELT(S)) or a personal locator beacon (PLB), carried by a crew member or a passenger, when certified for a maximum passenger seating configuration of six or less.
- (b) ELTs of any type and PLBs shall be capable of transmitting simultaneously on 121,5 MHz and 406 MHz.

AMC1 NCO.IDE.A.170 Emergency locator transmitter (ELT)**BATTERIES**

- (a) All batteries used in ELTs or PLBs should be replaced (or recharged, if the battery is rechargeable) when the equipment has been in use for more than 1 cumulative hour or in the following cases:
 - (1) Batteries specifically designed for use in ELTs and having an airworthiness release certificate (EASA Form 1 or equivalent) should be replaced (or recharged, if the battery is rechargeable) before the end of their useful life in accordance with the maintenance instructions applicable to the ELT.
 - (2) Standard batteries manufactured in accordance with an industry standard and not having an airworthiness release certificate (EASA Form 1 or equivalent), when used in ELTs should be replaced (or recharged, if the battery is rechargeable) when 50 % of their useful life (or for rechargeable, 50 % of their useful life of charge), as established by the battery manufacturer, has expired.
 - (3) All batteries used in PLBs should be replaced (or recharged, if the battery is rechargeable) when 50 % of their useful life (or for rechargeable, 50 % of their useful life of charge), as established by the battery manufacturer, has expired.
 - (4) The battery useful life (or useful life of charge) criteria in (1),(2) and (3) do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.
- (b) The new expiry date for a replaced (or recharged) battery should be legibly marked on the outside of the equipment.

AMC2 NCO.IDE.A.170 Emergency locator transmitter (ELT)**TYPES OF ELT AND GENERAL TECHNICAL SPECIFICATIONS**

- (a) The ELT required by this provision should be one of the following:
 - (1) Automatic fixed (ELT(AF)). An automatically activated ELT that is permanently attached to an aircraft and is designed to aid search and rescue (SAR) teams in locating the crash site.
 - (2) Automatic portable (ELT(AP)). An automatically activated ELT that is rigidly attached to an aircraft before a crash, but is readily removable from the aircraft after a crash. It functions as an ELT during the crash sequence. If the ELT does not employ an integral antenna, the aircraft-mounted antenna may be disconnected and an auxiliary antenna (stored 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 SAR teams in locating the crash site or survivor(s).

- (3) Automatic deployable (ELT(AD)). An ELT that is rigidly attached to the aircraft before the crash and that is automatically ejected, deployed and activated by an impact, and, in some cases, also by hydrostatic sensors. Manual deployment is also provided. This type of ELT should float in water and is intended to aid SAR teams in locating the crash site.
- (4) Survival ELT (ELT(S)). An ELT that is removable from an aircraft, stowed so as to facilitate its ready use in an emergency and manually activated by a survivor. An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed either to be tethered to a life-raft or a survivor.
- (b) To minimise the possibility of damage in the event of crash impact, the automatic ELT should be rigidly fixed to the aircraft structure, as far aft as is practicable, with its antenna and connections arranged so as to maximise the probability of the signal being transmitted after a crash.
- (c) Any ELT carried should operate in accordance with the relevant provisions of ICAO Annex 10, Volume III, and should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

AMC3 NCO.IDE.A.170 Emergency locator transmitter (ELT)

PLB TECHNICAL SPECIFICATIONS

- (a) A personal locator beacon (PLB) should have a built-in GNSS receiver with a cosmicheskaya sistyema poiska aviarynich sudov — search and rescue satellite-aided tracking (COSPAS-SARSAT) type approval number. However, devices with a COSPAS-SARSAT number belonging to series 700 are excluded as this series of numbers identifies the special-use beacons not meeting all the technical requirements and all the tests specified by COSPAS-SARSAT.
- (b) Any PLB carried should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

AMC4 NCO.IDE.A.170 Emergency locator transmitter (ELT)

BRIEFING ON PLB USE

When a PLB is carried by a passenger, he/she should be briefed on its characteristics and use by the pilot-in-command before the flight.

GM1 NCO.IDE.A.170 Emergency locator transmitter (ELT)

TERMINOLOGY

- (a) An ELT is a generic term describing equipment that broadcasts distinctive signals on designated frequencies and, depending on application, may be activated by impact or may be manually activated.
- (b) A PLB is an emergency beacon other than an ELT that broadcasts distinctive signals on designated frequencies, is standalone, portable and is manually activated by the survivors.

NCO.IDE.A.175 Flight over water

- (a) The following aeroplanes shall be equipped with a life-jacket for each person on board, or equivalent individual floatation device for each person on board younger than 24 months, that shall be worn or stowed in a position that is readily accessible from the seat or berth of the person for whose use it is provided:
- (1) single-engined landplanes when:
 - (i) flying over water beyond gliding distance from land; or
 - (ii) taking off or landing at an aerodrome or operating site where, in the opinion of the pilot-in-command, the take-off or approach path is so disposed over water that there would be a likelihood of a ditching;
 - (2) seaplanes operated over water; and
 - (3) aeroplanes operated at a distance away from land where an emergency landing is possible greater than that corresponding to 30 minutes at normal cruising speed or 50 NM, whichever is less.
- (b) Seaplanes operated over water shall be equipped with:
- (1) one anchor;
 - (2) one sea anchor (drogue), when necessary to assist in manoeuvring; and
 - (3) equipment for making the sound signals, as prescribed in the International Regulations for Preventing Collisions at Sea, where applicable.
- (c) The pilot-in-command of an aeroplane operated at a distance away from land where an emergency landing is possible greater than that corresponding to 30 minutes at normal cruising speed or 50 NM, whichever is the lesser, shall determine the risks to survival of the occupants of the aeroplane in the event of a ditching, based on which he/she shall determine the carriage of:
- (1) equipment for making the distress signals;
 - (2) life-rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in emergency; and
 - (3) life-saving equipment, to provide the means of sustaining life, as appropriate to the flight to be undertaken.

AMC1 NCO.IDE.A.175 Flight over water**ACCESSIBILITY OF LIFE-JACKETS**

The life-jacket, if not worn, should be accessible from the seat or berth of the person for whose use it is provided, with a safety belt or a restraint system fastened.

MEANS OF ILLUMINATION FOR LIFE-JACKETS

Each life-jacket or equivalent individual floatation device should be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

RISK ASSESSMENT

- (a) When conducting the risk assessment, the pilot-in-command should base his/her decision, as far as is practicable, on the Implementing Rules and AMCs applicable to the operation of the aeroplane.
- (b) The pilot-in-command should, for determining the risk, take the following operating environment and conditions into account:
 - (1) sea state;
 - (2) sea and air temperatures;
 - (3) the distance from land suitable for making an emergency landing; and
 - (4) the availability of search and rescue facilities.

GM1 NCO.IDE.A.175 Flight over water**SEAT CUSHIONS**

Seat cushions are not considered to be flotation devices.

NCO.IDE.A.180 Survival equipment

Aeroplanes operated over areas in which search and rescue would be especially difficult shall be equipped with such signalling devices and life-saving equipment, including means of sustaining life, as may be appropriate to the area overflown.

AMC1 NCO.IDE.A.180 Survival equipment**GENERAL**

- (a) Aeroplanes operated across land areas in which search and rescue would be especially difficult should be equipped with the following:
 - (1) signalling equipment to make the distress signals;
 - (2) at least one ELT(S) or a PLB, carried by the pilot-in-command or a passenger; and
 - (3) additional survival equipment for the route to be flown, taking account of the number of persons on board.
- (b) The additional survival equipment specified in (a)(3) does not need to be carried when the aeroplane remains within a distance from an area where search and rescue is not especially difficult, that corresponds to:
 - (1) 120 minutes at one-engine-inoperative (OEI) cruising speed for aeroplanes capable of continuing the flight to an aerodrome with the critical engine(s) becoming inoperative at any point along the route or planned diversion routes; or
 - (2) 30 minutes at cruising speed for all other aeroplanes.

AMC2 NCO.IDE.A.180 Survival equipment**ADDITIONAL SURVIVAL EQUIPMENT**

- (a) The following additional survival equipment should be carried when required:
 - (1) 500 ml of water for each four, or fraction of four, persons on board;
 - (2) one knife;
 - (3) first-aid equipment; and
 - (4) one set of air/ground codes.
- (b) If any item of equipment contained in the above list is already carried on board the aeroplane in accordance with another requirement, there is no need for this to be duplicated.

GM1 NCO.IDE.A.180 Survival equipment**SIGNALLING EQUIPMENT**

The signalling equipment for making distress signals is described in ICAO Annex 2, Rules of the Air.

GM2 NCO.IDE.A.180 Survival equipment**AREAS IN WHICH SEARCH AND RESCUE WOULD BE ESPECIALLY DIFFICULT**

The expression 'areas in which search and rescue would be especially difficult' should be interpreted, in this context, as meaning:

-
- (a) areas so designated by the competent authority responsible for managing search and rescue; or
 - (b) areas that are largely uninhabited and where:
 - (1) the authority referred to in (a) has not published any information to confirm whether search and rescue would be or would not be especially difficult; and
 - (2) the authority referred to in (a) does not, as a matter of policy, designate areas as being especially difficult for search and rescue.

NCO.IDE.A.190 Radio communication equipment

- (a) Where required by the airspace being flown aeroplanes shall be equipped with radio communication equipment capable of conducting two-way communication with those aeronautical stations and on those frequencies to meet airspace requirements.
- (b) Radio communication equipment, if required by (a), shall provide for communication on the aeronautical emergency frequency 121,5 MHz.
- (c) When more than one communication equipment unit is required, each shall be independent of the other or others to the extent that a failure in any one will not result in failure of any other.

GM1 NCO.IDE.A.190 Radio communication equipment**APPLICABLE AIRSPACE REQUIREMENTS**

For aeroplanes being operated under European air traffic control, the applicable airspace requirements include the Single European Sky legislation.

NCO.IDE.A.195 Navigation equipment

- (a) Aeroplanes operated over routes that cannot be navigated by reference to visual landmarks shall be equipped with any navigation equipment necessary to enable them to proceed in accordance with:
 - (1) the ATS flight plan; if applicable; and
 - (2) the applicable airspace requirements.
- (b) Aeroplanes shall have sufficient navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment shall allow safe navigation in accordance with (a), or an appropriate contingency action, to be completed safely.
- (c) Aeroplanes operated on flights in which it is intended to land in IMC shall be equipped with suitable equipment capable of providing guidance to a point from which a visual landing can be performed. This equipment shall be capable of providing such guidance for each aerodrome at which it is intended to land in IMC and for any designated alternate aerodromes.

AMC1 NCO.IDE.A.195 Navigation equipment**NAVIGATION WITH VISUAL REFERENCE TO LANDMARKS**

Where aeroplanes, with the surface in sight, can proceed according to the ATS flight plan by navigation with visual reference to landmarks, no additional equipment is needed to comply with NCO.IDE.A.195 (a)(1).

NCO.IDE.A.200 Transponder

Where required by the airspace being flown, aeroplanes shall be equipped with a secondary surveillance radar (SSR) transponder with all the required capabilities.

AMC1 NCO.IDE.A.200 Transponder**GENERAL**

- (a) The secondary surveillance radar (SSR) transponders of aeroplanes being operated under European air traffic control should comply with any applicable Single European Sky legislation.
- (b) If the Single European Sky legislation is not applicable, the SSR transponders should operate in accordance with the relevant provisions of Volume IV of ICAO Annex 10.

SECTION 2
Helicopters**NCO.IDE.H.100 Instruments and equipment — general**

- (a) Instruments and equipment required by this Subpart shall be approved in accordance with the applicable airworthiness requirements if they are:
 - (1) used by the flight crew to control the flight path;
 - (2) used to comply with NCO.IDE.H.190;
 - (3) used to comply with NCO.IDE.H.195; or
 - (4) installed in the helicopter.
- (b) The following items, when required by this Subpart, do not need an equipment approval:
 - (1) independent portable lights;
 - (2) an accurate time piece;
 - (3) first-aid kit;
 - (4) survival and signalling equipment;
 - (5) sea anchor and equipment for mooring; and
 - (6) child restraint device.
- (c) Instruments and equipment not required by this Subpart, as well as any other equipment that is not required by other applicable Annexes, but is carried on a flight, shall comply with the following:
 - (1) the information provided by these instruments or equipment shall not be used by the flight crew to comply with Annex I to Regulation (EC) No 216/2008 or NCO.IDE.H.190 and NCO.IDE.H.195; and
 - (2) the instruments and equipment shall not affect the airworthiness of the helicopter, even in the case of failures or malfunction.
- (d) Instruments and equipment shall be readily operable or accessible from the station where the flight crew member that needs to use it is seated.
- (e) All required emergency equipment shall be easily accessible for immediate use.

GM1 NCO.IDE.H.100(a) Instruments and equipment — general**APPLICABLE AIRWORTHINESS REQUIREMENTS**

The applicable airworthiness requirements for approval of instruments and equipment required by this Part are the following:

- (a) Regulation (EU) No 748/2012 for helicopters registered in the EU; and
- (b) Airworthiness requirements of the State of registry for helicopters registered outside the EU.

GM1 NCO.IDE.H.100(b) Instruments and equipment — general**REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS**

The functionality of non-installed instruments and equipment required by this Subpart and that do not need an equipment approval, as listed in NCO.IDE.H.100(b), should be checked against recognised industry standards appropriate to the intended purpose. The operator is responsible for ensuring the maintenance of these instruments and equipment.

GM1 NCO.IDE.H.100(c) Instruments and equipment — general**NOT REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS, BUT ARE CARRIED ON A FLIGHT**

- (a) The provision of this paragraph does not exempt any installed instrument or item of equipment from complying with the applicable airworthiness requirements. In this case, the installation should be approved as required in the applicable airworthiness requirements and should comply with the applicable Certification Specifications.
- (b) The failure of additional non-installed instruments or equipment not required by this Part or by the applicable airworthiness requirements or any applicable airspace requirements should not adversely affect the airworthiness and/or the safe operation of the helicopter. Examples may be the following:
 - (1) portable electronic flight bag (EFB);
 - (2) portable electronic devices carried by crew members; and
 - (3) non-installed passenger entertainment equipment.

NCO.IDE.H.105 Minimum equipment for flight

A flight shall not be commenced when any of the helicopter's instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless:

- (a) the helicopter is operated in accordance with the MEL, if established; or
- (b) the helicopter is subject to a permit to fly issued in accordance with the applicable airworthiness requirements.

NCO.IDE.H.115 Operating lights

Helicopters operated at night shall be equipped with:

- (a) an anti-collision light system;
- (b) navigation/position lights;
- (c) a landing light;
- (d) lighting supplied from the helicopter's electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the helicopter;
- (e) lighting supplied from the helicopter's electrical system to provide illumination in all passenger compartments;
- (f) an independent portable light for each crew member station; and
- (g) lights to conform with the International Regulations for Preventing Collisions at Sea if the helicopter is amphibious.

AMC1 NCO.IDE.H.115 Operating lights**LANDING LIGHT**

The landing light should be trainable, at least in the vertical plane, or optionally be an additional fixed light or lights positioned to give a wide spread of illumination.

NCO.IDE.H.120 Operations under VFR — flight and navigational instruments and associated equipment

- (a) Helicopters operated under VFR by day shall be equipped with a means of measuring and displaying the following:
 - (1) magnetic heading;
 - (2) time in hours, minutes and seconds;
 - (3) pressure altitude;
 - (4) indicated airspeed; and
 - (5) slip.
- (b) Helicopters operated under VMC at night, or when the visibility is less than 1 500 m, or in conditions where the helicopter cannot be maintained in a desired flight path without reference to one or more additional instruments, shall be, in addition to (a), equipped with:
 - (1) a means of measuring and displaying the following:
 - (i) attitude;
 - (ii) vertical speed; and
 - (iii) stabilised heading; and
 - (2) a means of indicating when the supply of power to the gyroscopic instruments is not adequate.
- (c) Helicopters operated when the visibility is less than 1 500 m, or in conditions where the helicopter cannot be maintained in a desired flight path without reference to one or more additional instruments, shall be, in addition to (a) and (b), equipped with a means of preventing malfunction of the airspeed indicating system required in (a)(4) due to condensation or icing.

AMC1 NCO.IDE.H.120&NCO.IDE.H.125 Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment**INTEGRATED INSTRUMENTS**

- (a) Individual equipment requirements may be met by combinations of instruments, by integrated flight systems or by a combination of parameters on electronic displays. The information so available to each required pilot should not be less than that required in the applicable operational requirements, and the equivalent safety of the installation should be approved during type certification of the helicopter for the intended type of operation.
- (b) The means of measuring and indicating turn and slip, helicopter attitude and stabilised helicopter heading may be met by combinations of instruments or by integrated flight director systems, provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

AMC1 NCO.IDE.H.120(a)(1)&NCO.IDE.H.125(a)(1) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment**MEANS OF MEASURING AND DISPLAYING MAGNETIC HEADING**

The means of measuring and displaying magnetic direction should be a magnetic compass or equivalent.

AMC1 NCO.IDE.H.120(a)(2)&NCO.IDE.H.125(a)(2) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment**MEANS OF MEASURING AND DISPLAYING THE TIME**

A means of measuring and displaying the time in hours, minutes and seconds may be a wrist watch capable of the same functions.

AMC1 NCO.IDE.H.120(a)(3)&NCO.IDE.H.125(a)(3) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment**CALIBRATION OF THE MEANS OF MEASURING AND DISPLAYING PRESSURE ALTITUDE**

The instrument measuring and displaying pressure altitude should be of a sensitive type calibrated in feet (ft), with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight.

AMC1 NCO.IDE.H.120(a)(5) Operations under VFR — flight and navigational instruments and associated equipment**SLIP**

The means of measuring and displaying slip may be a slip string for operations under VFR.

NCO.IDE.H.125 Operations under IFR — flight and navigational instruments and associated equipment

Helicopters operated under IFR shall be equipped with:

- (a) a means of measuring and displaying the following:
 - (1) magnetic heading;
 - (2) time in hours, minutes and seconds;
 - (3) pressure altitude;
 - (4) indicated airspeed;
 - (5) vertical speed;
 - (6) slip;
 - (7) attitude;
 - (8) stabilised heading; and
 - (9) outside air temperature;
- (b) a means of indicating when the supply of power to the gyroscopic instruments is not adequate;
- (c) a means of preventing malfunction of the airspeed indicating system required by (a)(4) due to condensation or icing; and
- (d) an additional means of measuring and displaying attitude as a standby instrument.

GM1 NCO.IDE.H.125(a)(3) Operations under IFR — flight and navigational instruments and associated equipment**ALTIMETERS**

Altimeters with counter drum-pointer or equivalent presentation are considered to be less susceptible to misinterpretation for helicopters operating above 10 000 ft.

AMC1 NCO.IDE.H.120(a)(4)&NCO.IDE.H.125(a)(4) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment**CALIBRATION OF THE INSTRUMENT INDICATING AIRSPEED**

- (a) The instrument indicating airspeed should be calibrated in knots (kt).
- (b) In the case of helicopters with an MCTOM below 2 000 kg, calibration in kilometres per hour (kph) or in miles per hour (mph) is acceptable when such units are used in the AFM.

AMC1 NCO.IDE.H.120(b)(1)(iii)&NCO.IDE.H.125(a)(8) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment**STABILISED HEADING**

Stabilised direction should be achieved for VFR flights by a gyroscopic direction indicator, whereas for IFR flights, this should be achieved through a magnetic gyroscopic direction indicator.

AMC1 NCO.IDE.H.120(c)&NCO.IDE.H.125(c) Operations under VFR & Operations under IFR — flight and navigational instruments and associated equipment**MEANS OF PREVENTING MALFUNCTION DUE TO CONDENSATION OR ICING**

The means of preventing malfunction due to either condensation or icing of the airspeed indicating system should be a heated pitot tube or equivalent.

AMC1 NCO.IDE.H.125(a)(9) Operations under IFR — flight and navigational instruments and associated equipment**MEANS OF DISPLAYING OUTSIDE AIR TEMPERATURE**

- (a) The means of displaying outside air temperature should be calibrated in degrees Celsius.
- (b) In the case of helicopters with a maximum certified take-off mass (MCTOM) below 2 000 kg, calibration in degrees Fahrenheit is acceptable, when such unit is used in the AFM.
- (c) The means of displaying outside air temperature may be an air temperature indicator that provides indications that are convertible to outside air temperature.

NCO.IDE.H.126 Additional equipment for single pilot operations under IFR

Helicopters operated under IFR with a single pilot shall be equipped with an autopilot with at least altitude hold and heading mode.

NCO.IDE.H.135 Flight crew interphone system

Helicopters operated by more than one flight crew member shall be equipped with a flight crew interphone system, including headsets and microphones for use by all flight crew members.

AMC1 NCO.IDE.H.135 Flight crew interphone system**GENERAL**

- (a) The flight crew interphone system should not be of a handheld type.
- (b) A headset consists of a communication device which includes two earphones to receive and a microphone to transmit audio signals to the helicopter's communication system. To comply with the minimum performance requirements, the earphones and microphone should match the communication system's characteristics and the flight crew compartment environment. The headset should be adequately adjustable in order to fit the pilot's head. Headset boom microphones should be of the noise cancelling type.
- (c) If the intention is to utilise noise cancelling earphones, the pilot-in-command should ensure that the earphones do not attenuate any aural warnings or sounds necessary for alerting the flight crew on matters related to the safe operation of the helicopter.

GM1 NCO.IDE.H.135 Flight crew interphone system**HEADSET**

The term 'headset' includes any aviation helmet incorporating headphones and microphone worn by a flight crew member.

NCO.IDE.H.140 Seats, seat safety belts, restraint systems and child restraint devices

- (a) Helicopters shall be equipped with:
 - (1) a seat or berth for each person on board who is aged 24 months or more;
 - (2) a seat belt on each passenger seat and restraining belts for each berth;
 - (3) for helicopters first issued with an individual CofA after 31 December 2012, a seat belt with an upper torso restraint system for each passenger who is aged 24 months or more;
 - (4) a child restraint device for each person on board younger than 24 months; and
 - (5) a seat belt with upper torso restraint system incorporating a device that will automatically restrain the occupant's torso in the event of rapid deceleration on each flight crew seat.
- (b) A seat belt with upper torso restraint system shall have a single point release.

AMC1 NCO.IDE.H.140 Seats, seat safety belts, restraint systems and child restraint devices**CHILD RESTRAINT DEVICES (CRDS)**

- (a) A CRD is considered to be acceptable if:
 - (1) it is a supplementary loop belt manufactured with the same techniques and the same materials of the approved safety belts; or
 - (2) it complies with (b).
- (b) Provided the CRD can be installed properly on the respective helicopter seat, the following CRDs are considered acceptable:
 - (1) CRDs approved for use in aircraft by a competent authority on the basis of a technical standard and marked accordingly.
 - (2) CRDs approved for use in motor vehicles according to the UN standard ECE R 44, -03 or later series of amendments.
 - (3) CRDs approved for use in motor vehicles and aircraft according to Canadian CMVSS 213/213.1.
 - (4) CRDs approved for use in motor vehicles and aircraft according to US FMVSS No 213 and manufactured to these standards on or after February 26, 1985. US approved CRDs manufactured after this date should bear the following labels in red letters:
 - (i) 'THIS CHILD RESTRAINT SYSTEM CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS'; and
 - (ii) 'THIS RESTRAINT IS CERTIFIED FOR USE IN MOTOR VEHICLES AND AIRCRAFT';
 - (5) CRDs qualified for use in aircraft according to the German 'Qualification Procedure for Child Restraint Systems for Use in Aircraft' (TÜV Doc.: TÜV/958-01/2001); and
 - (6) Devices approved for use in cars, manufactured and tested to standards equivalent to those listed above. The device should be marked with an associated qualification sign, which shows the name of the qualification organisation and a specific identification number, related to the associated qualification project. The qualifying organisation should be a competent and independent organisation that is acceptable to the competent authority.

(c) Location

- (1) Forward facing CRDs may be installed on both forward and rearward facing passenger seats but only when fitted in the same direction as the passenger seat on which they are positioned. Rearward facing CRDs should only be installed on forward facing passenger seats. A CRD may not be installed within the radius of action of an airbag, unless it is obvious that the airbag is de-activated or it can be demonstrated that there is no negative impact from the airbag.
- (2) An infant in a CRD should be located as near to a floor level exit as feasible.
- (3) An infant in a CRD should not hinder evacuation for any passenger.

(d) Installation

- (1) CRDs should only be installed on a suitable helicopter seat with the type of connecting device they are approved or qualified for. E.g., CRDs to be connected by a three point harness only (most rearward facing baby CRDs currently available) should not be attached to a helicopter seat with a lap belt only; a CRD designed to be attached to a vehicle seat by means of rigid bar lower anchorages (ISO-FIX or US equivalent) only, should only be used on helicopter seats that are equipped with such connecting devices and should not be attached by the helicopter seat lap belt. The method of connecting should be the one shown in the manufacturer's instructions provided with each CRD.
- (2) All safety and installation instructions should be followed carefully by the responsible person accompanying the infant.
- (3) If a forward facing CRD with a rigid backrest is to be fastened by a lap belt, the restraint device should be fastened when the backrest of the passenger seat on which it rests is in a reclined position. Thereafter, the backrest is to be positioned upright. This procedure ensures better tightening of the CRD on the aircraft seat if the aircraft seat is reclinable.
- (4) The buckle of the adult safety belt should be easily accessible for both opening and closing, and should be in line with the seat belt halves (not canted) after tightening.
- (5) Forward facing restraint devices with an integral harness must not be installed such that the adult safety belt is secured over the infant.

(e) Operation

- (1) Each CRD should remain secured to a passenger seat during all phases of flight, unless it is properly stowed when not in use.
- (2) Where a CRD is adjustable in recline, it should be in an upright position for all occasions when passenger restraint devices are required.

AMC2 NCO.IDE.H.140 Seats, seat safety belts, restraint systems and child restraint devices

UPPER TORSO RESTRAINT SYSTEM

The following systems are deemed to be compliant with the requirement for an upper torso restraint system:

- (a) a seat belt with a diagonal shoulder strap;
- (b) a restraint system having a seat belt and two shoulder straps that may be used independently;
- (c) a restraint system having a seat belt, two shoulder straps and additional straps that may be used independently.

SEAT BELT

A seat belt with diagonal shoulder strap (three anchorage points) is deemed to be compliant with the requirement for a seat belt (two anchorage points).

NCO.IDE.H.145 First-aid kit

- (a) Helicopters shall be equipped with a first-aid kit.
- (b) The first-aid kit shall be:
 - (1) readily accessible for use; and
 - (2) kept up-to-date.

AMC1 NCO.IDE.H.145 First-aid kit

CONTENT OF FIRST-AID KITS

- (a) First-aid kits should be equipped with appropriate and sufficient medications and instrumentation. However, these kits should be amended by the operator according to the characteristics of the operation (scope of operation, flight duration, number and demographics of passengers, etc.).
- (b) The following should be included in the FAKs:
 - (1) bandages (assorted sizes),
 - (2) burns dressings (large and small),
 - (3) wound dressings (large and small),
 - (4) adhesive dressings (assorted sizes),
 - (5) antiseptic wound cleaner,
 - (6) safety scissors,
 - (7) disposable gloves.

AMC2 NCO.IDE.H.145 First-aid kit

MAINTENANCE OF FIRST-AID KIT

To be kept up-to-date, the first-aid kit should be:

- (a) inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use;
- (b) replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant; and
- (c) replenished after use in-flight at the first opportunity where replacement items are available.

NCO.IDE.H.155 Supplemental oxygen — non-pressurised helicopters

- (a) Non-pressurised helicopters operated at flight altitudes when the oxygen supply is required in accordance with (b) shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the required oxygen supplies.
- (b) Non-pressurised helicopters operated above flight altitudes at which the pressure altitude in the passenger compartments is above 10 000 ft shall carry enough breathing oxygen to supply:
 - (1) all crew members and at least 10 % of the passengers for any period in excess of 30 minutes when the pressure altitude in the passenger compartment will be between 10 000 ft and 13 000 ft; and
 - (2) all crew members and passengers for any period that the pressure altitude in the passenger compartment will be above 13 000 ft.

AMC1 NCO.IDE.H.155 Supplemental oxygen — non-pressurised helicopters**DETERMINATION OF OXYGEN**

The amount of oxygen should be determined on the basis of cabin pressure altitude and flight duration, consistent with the operating procedures, including emergency procedures, established for each operation and the routes to be flown as specified in the AFM.

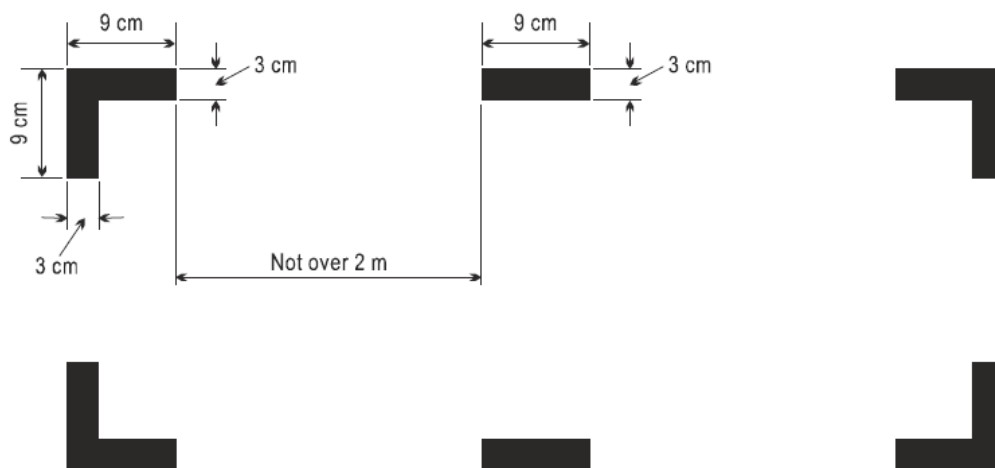
NCO.IDE.H.160 Hand fire extinguishers

- (a) Helicopters, except ELA2 helicopters, shall be equipped with at least one hand fire extinguisher:
- (1) in the flight crew compartment; and
 - (2) in each passenger compartment that is separate from the flight crew compartment, except if the compartment is readily accessible to the flight crew.
- (b) The type and quantity of extinguishing agent for the required fire extinguishers shall be suitable for the type of fire likely to occur in the compartment where the extinguisher is intended to be used and to minimise the hazard of toxic gas concentration in compartments occupied by persons.

NCO.IDE.H.165 Marking of break-in points

If areas of the helicopter's fuselage suitable for break-in by rescue crews in an emergency are marked, such areas shall be marked as shown in Figure 1.

Figure 1

Marking of break-in points**AMC1 NCO.IDE.H.165 Marking of break-in points****MARKINGS — COLOUR AND CORNERS**

- (a) The colour of the markings should be red or yellow and, if necessary, should be outlined in white to contrast with the background.
- (b) If the corner markings are more than 2 m apart, intermediate lines 9 cm x 3 cm should be inserted so that there is no more than 2 m between adjacent markings.

NCO.IDE.H.170 Emergency locator transmitter (ELT)

- (a) Helicopters certified for a maximum passenger seating configuration above six shall be equipped with:
 - (1) an automatic ELT; and
 - (2) one survival ELT (ELT(S)) in a life-raft or life-jacket when the helicopter is operated at a distance from land corresponding to more than 3 minutes flying time at normal cruising speed.
- (b) Helicopters certified for a maximum passenger seating configuration of six or less shall be equipped with an ELT(S) or a personal locator beacon (PLB), carried by a crew member or a passenger.
- (c) ELTs of any type and PLBs shall be capable of transmitting simultaneously on 121,5 MHz and 406 MHz.

AMC1 NCO.IDE.H.170 Emergency locator transmitter (ELT)**BATTERIES**

- (a) All batteries used in ELTs or PLBs should be replaced (or recharged, if the battery is rechargeable) when the equipment has been in use for more than 1 cumulative hour or in the following cases:
 - (1) Batteries specifically designed for use in ELTs and having an airworthiness release certificate (EASA Form 1 or equivalent) should be replaced (or recharged, if the battery is rechargeable) before the end of their useful life in accordance with the maintenance instructions applicable to the ELT.
 - (2) Standard batteries manufactured in accordance with an industry standard and not having an airworthiness release certificate (EASA Form 1 or equivalent), when used in ELTs should be replaced (or recharged, if the battery is rechargeable) when 50 % of their useful life (or for rechargeable, 50 % of their useful life of charge), as established by the battery manufacturer, has expired.
 - (3) All batteries used in PLBs should be replaced (or recharged, if the battery is rechargeable) when 50 % of their useful life (or for rechargeable, 50 % of their useful life of charge), as established by the battery manufacturer, has expired.
 - (4) The battery useful life (or useful life of charge) criteria in (1),(2) and (3) do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.
- (b) The new expiry date for a replaced (or recharged) battery should be legibly marked on the outside of the equipment.

AMC2 NCO.IDE.H.170 Emergency locator transmitter (ELT)**TYPES OF ELT AND GENERAL TECHNICAL SPECIFICATIONS**

- (a) The ELT required by this provision should be one of the following:
 - (1) Automatic fixed (ELT(AF)). An automatically activated ELT that is permanently attached to an aircraft and is designed to aid SAR teams in locating the crash site.
 - (2) Automatic portable (ELT(AP)). An automatically activated ELT that is rigidly attached to an aircraft before a crash, but is readily removable from the aircraft after a crash. It functions

as an ELT during the crash sequence. If the ELT does not employ an integral antenna, the aircraft-mounted antenna may be disconnected and an auxiliary antenna (stored 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 SAR teams in locating the crash site or survivor(s).

- (3) Automatic deployable (ELT(AD)). An ELT that is rigidly attached to the aircraft before the crash and that is automatically ejected, deployed and activated by an impact, and, in some cases, also by hydrostatic sensors. Manual deployment is also provided. This type of ELT should float in water and is intended to aid SAR teams in locating the crash site.
 - (4) Survival ELT (ELT(S)). An ELT that is removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by a survivor. An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed either to be tethered to a life-raft or a survivor.
- (b) To minimise the possibility of damage in the event of crash impact, the automatic ELT should be rigidly fixed to the aircraft structure, as far aft as is practicable, with its antenna and connections arranged so as to maximise the probability of the signal being transmitted after a crash.
 - (c) Any ELT carried should operate in accordance with the relevant provisions of ICAO Annex 10, Volume III, and should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

AMC3 NCO.IDE.H.170 Emergency locator transmitter (ELT)

PLB TECHNICAL SPECIFICATIONS

- (a) A personal locator beacon (PLB) should have a built-in GNSS receiver with a cosmicheskaya sistyema poiska avariynich sudov — search and rescue satellite-aided tracking (COSPAS-SARSAT) type approval number. However, devices with a COSPAS-SARSAT number belonging to series 700 are excluded as this series of numbers identifies the special-use beacons not meeting all the technical requirements and all the tests specified by COSPAS-SARSAT.
- (b) Any PLB carried should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

AMC4 NCO.IDE.H.170 Emergency locator transmitter (ELT)

BRIEFING ON PLB USE

When a PLB is carried by a passenger, he/she should be briefed on its characteristics and use by the pilot-in-command before the flight.

GM1 NCO.IDE.H.170 Emergency locator transmitter (ELT)

TERMINOLOGY

- (a) An ELT is a generic term describing equipment that broadcasts distinctive signals on designated frequencies and, depending on application, may be activated by impact or may be manually activated.
- (b) A PLB is an emergency beacon other than an ELT that broadcasts distinctive signals on designated frequencies, is standalone, portable and is manually activated by the survivors.

NCO.IDE.H.175 Flight over water

- (a) Helicopters shall be equipped with a life-jacket for each person on board or equivalent individual flotation device for each person on board younger than 24 months, which shall be worn or stowed in a position that is readily accessible from the seat or berth of the person for whose use it is provided, when:
 - (1) flying over water beyond autorotational distance from land where in case of the critical engine failure, the helicopter is not able to sustain level flight; or
 - (2) flying over water at a distance of land corresponding to more than 10 minutes flying at normal cruising speed, where in case of the critical engine failure, the helicopter is able to sustain level flight; or
 - (3) taking off or landing at an aerodrome/operating site where the take-off or approach path is over water.
- (b) Each life-jacket or equivalent individual flotation device shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.
- (c) The pilot-in-command of a helicopter operated on a flight over water at a distance from land corresponding to more than 30 minutes flying time at normal cruising speed or 50 NM, whichever is less, shall determine the risks to survival of the occupants of the helicopter in the event of a ditching, based on which he/she shall determine the carriage of:
 - (1) equipment for making the distress signals;
 - (2) life-rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in emergency; and
 - (3) life-saving equipment, to provide the means of sustaining life, as appropriate to the flight to be undertaken.
- (d) The pilot-in-command shall determine the risks to survival of the occupants of the helicopter in the event of a ditching, when deciding if the life-jackets required in (a) shall be worn by all occupants.

AMC1 NCO.IDE.H.175 Flight over water**ACCESSIBILITY OF LIFE-JACKETS**

The life-jacket, if not worn, should be accessible from the seat or berth of the person for whose use it is provided, with a safety belt or a restraint system fastened.

RISK ASSESSMENT

- (a) When conducting the risk assessment, the pilot-in-command should base his/her decision, as far as is practicable, on the Implementing Rules and AMCs applicable to the operation of the helicopter.
- (b) The pilot-in-command should, for determining the risk, take the following operating environment and conditions into account:
 - (1) sea state;
 - (2) sea and air temperatures;
 - (3) the distance from land suitable for making an emergency landing; and
 - (4) the availability of search and rescue facilities.

GM1 NCO.IDE.H.175 Flight over water

SEAT CUSHIONS

Seat cushions are not considered to be flotation devices.

NCO.IDE.H.180 Survival equipment

Helicopters, operated over areas in which search and rescue would be especially difficult, shall be equipped with such signalling devices and life-saving equipment, including means of sustaining life, as may be appropriate to the area overflown.

AMC1 NCO.IDE.H.180 Survival equipment**GENERAL**

Helicopters operated across areas in which search and rescue would be especially difficult should be equipped with the following:

- (a) signalling equipment to make the distress signals;
- (b) at least one ELT(S) or a PLB, carried by the pilot-in-command or a passenger; and
- (c) additional survival equipment for the route to be flown taking account of the number of persons on board.

AMC2 NCO.IDE.H.180 Survival equipment**ADDITIONAL SURVIVAL EQUIPMENT**

- (a) The following additional survival equipment should be carried when required:
 - (1) 500 ml of water for each four, or fraction of four, persons on board;
 - (2) one knife;
 - (3) first-aid equipment; and
 - (4) one set of air/ground codes.
- (b) 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.

GM1 NCO.IDE.H.180 Survival equipment**SIGNALLING EQUIPMENT**

The signalling equipment for making distress signals is described in ICAO Annex 2, Rules of the Air.

GM2 NCO.IDE.H.180 Survival equipment**AREAS IN WHICH SEARCH AND RESCUE WOULD BE ESPECIALLY DIFFICULT**

The expression 'areas in which search and rescue would be especially difficult' should be interpreted, in this context, as meaning:

- (a) areas so designated by the competent authority responsible for managing search and rescue; or
- (b) areas that are largely uninhabited and where:
 - (1) the authority referred to in (a) has not published any information to confirm whether search and rescue would be or would not be especially difficult; and
 - (2) the authority referred to in (a) does not, as a matter of policy, designate areas as being especially difficult for search and rescue.

NCO.IDE.H.185 All helicopters on flights over water — ditching

Helicopters flying over water in a hostile environment beyond a distance of 50 NM from land shall be:

- (a) designed for landing on water in accordance with the relevant airworthiness code;
- (b) certified for ditching in accordance with the relevant airworthiness code; or
- (c) fitted with emergency flotation equipment.

AMC1 NCO.IDE.H.185 All helicopters on flights over water — ditching**EMERGENCY FLOTATION EQUIPMENT**

The same considerations of AMC1 NCC.IDE.H.231 should apply in respect of emergency flotation equipment.

NCO.IDE.H.190 Radio communication equipment

- (a) Where required by the airspace being flown helicopters shall be equipped with radio communication equipment capable of conducting two-way communication with those aeronautical stations and on those frequencies to meet airspace requirements.
- (b) Radio communication equipment, if required by (a), shall provide for communication on the aeronautical emergency frequency 121,5 MHz.
- (c) When more than one communications equipment unit is required, each shall be independent of the other or others to the extent that a failure in any one will not result in failure of any other.
- (d) When a radio communication system is required, and in addition to the flight crew interphone system required in NCO.IDE.H.135, helicopters shall be equipped with a transmit button on the flight controls for each required pilot and/or crew member at his/her working station.

NCO.IDE.H.195 Navigation equipment

- (a) Helicopters operated over routes that cannot be navigated by reference to visual landmarks shall be equipped with navigation equipment that will enable them to proceed in accordance with:
 - (1) the ATS flight plan, if applicable; and
 - (2) the applicable airspace requirements.
- (b) Helicopters shall have sufficient navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment shall allow safe navigation in accordance with (a), or an appropriate contingency action, to be completed safely.
- (c) Helicopters operated on flights in which it is intended to land in IMC shall be equipped with navigation equipment capable of providing guidance to a point from which a visual landing can be performed. This equipment shall be capable of providing such guidance for each aerodrome at which is intended to land in IMC and for any designated alternate aerodromes.

AMC1 NCO.IDE.H.195 Navigation equipment**NAVIGATION WITH VISUAL REFERENCE TO LANDMARKS**

Where helicopters, with the surface in sight, can proceed according to the ATS flight plan by navigation with visual reference to landmarks, no additional equipment is needed to comply NCO.IDE.H.195(a)(1).

GM1 NCO.IDE.H.195 Navigation equipment**APPLICABLE AIRSPACE REQUIREMENTS**

For helicopters being operated under European air traffic control, the applicable airspace requirements include the Single European Sky legislation.

NCO.IDE.H.200 Transponder

Where required by the airspace being flown, helicopters shall be equipped with a secondary surveillance radar (SSR) transponder with all the required capabilities.

AMC1 NCO.IDE.H.200 Transponder**GENERAL**

- (a) The secondary surveillance radar (SSR) transponders of helicopters being operated under European air traffic control should comply with any applicable Single European Sky legislation.
- (b) If the Single European Sky legislation is not applicable, the SSR transponders should operate in accordance with the relevant provisions of Volume IV of ICAO Annex 10.

SECTION 3
Sailplanes**NCO.IDE.S.100 Instruments and equipment — general**

- (a) Instruments and equipment required by this Subpart shall be approved in accordance with the applicable airworthiness requirements if they are:
 - (1) used by the flight crew to control the flight path;
 - (2) used to to comply with NCO.IDE.S.145;
 - (3) used to comply with NCO.IDE.S.150; or
 - (4) installed in the sailplane.
- (b) The following items, when required by this Subpart, do not need an equipment approval:
 - (1) independent portable lights;
 - (2) an accurate time piece;
 - (3) survival and signalling equipment.
- (c) Instruments and equipment not required by this Subpart as well as any other equipment that is not required by other Annexes, but is carried on a flight, shall comply with the following:
 - (1) the information provided by these instruments or, equipment shall not be used by the flight crew to comply with Annex I to Regulation (EC) No 216/2008; and
 - (2) the instruments and equipment shall not affect the airworthiness of the sailplane, even in the case of failures or malfunction.
- (d) Instruments and equipment shall be readily operable or accessible from the station where the flight crew member that needs to use it is seated.
- (e) All required emergency equipment shall be easily accessible for immediate use.

GM1 NCO.IDE.S.100(a) Instruments and equipment — general**APPLICABLE AIRWORTHINESS REQUIREMENTS**

The applicable airworthiness requirements for approval of instruments and equipment required by this Part are the following:

- (a) Regulation (EU) No 748/2012 for sailplanes registered in the EU; and
- (b) Airworthiness requirements of the State of registry for sailplanes registered outside the EU.

GM1 NCO.IDE.S.100(b) Instruments and equipment — general**REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS**

The functionality of non-installed instruments and equipment required by this Subpart and that do not need an equipment approval, as listed in NCO.IDE.S.100(b), should be checked against recognised industry standards appropriate to the intended purpose. The operator is responsible for ensuring the maintenance of these instruments and equipment.

GM1 NCO.IDE.S.100(c) Instruments and equipment — general

NOT REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS, BUT ARE CARRIED ON A FLIGHT

- (a) The provision of this paragraph does not exempt any installed instrument or item of equipment from complying with the applicable airworthiness requirements. In this case, the installation should be approved as required in the applicable airworthiness requirements and should comply with the applicable Certification Specifications.
- (b) The failure of additional non-installed instruments or equipment not required by this Part or by the applicable airworthiness requirements or any applicable airspace requirements should not adversely affect the airworthiness and/or the safe operation of the sailplane. Examples may be portable electronic devices carried by crew members or passengers.

NCO.IDE.S.105 Minimum equipment for flight

A flight shall not be commenced when any of the sailplane instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless:

- (a) the sailplane is operated in accordance with the MEL, if established; or
- (b) the sailplane is subject to a permit to fly issued in accordance with the applicable airworthiness requirements.

NCO.IDE.S.115 Operations under VFR — flight and navigational instruments

- (a) Sailplanes operated under VFR by day shall be equipped with a means of measuring and displaying the following:
 - (1) in the case of powered sailplanes, magnetic heading;
 - (2) time in hours, minutes and seconds;
 - (3) pressure altitude; and
 - (4) indicated airspeed.
- (b) Sailplanes operating in conditions where the sailplane cannot be maintained in a desired flight path without reference to one or more additional instruments, shall be, in addition to (a), equipped with a means of measuring and displaying the following:
 - (1) vertical speed;
 - (2) attitude or turn and slip; and
 - (3) magnetic heading.

AMC1 NCO.IDE.S.115&NCO.IDE.S.120 Operations under VFR & cloud flying — flight and navigational instruments**INTEGRATED INSTRUMENTS**

- (a) Individual equipment requirements may be met by combinations of instruments or by integrated flight systems or by a combination of parameters on electronic displays. The information so available to each required pilot should not be less than that required in the applicable operational requirements, and the equivalent safety of the installation should be approved during type certification of the sailplane for the intended type of operation.
- (b) The means of measuring and indicating turn and slip and sailplane attitude may be met by combinations of instruments, provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

AMC1 NCO.IDE.S.115(a)(1)&NCO.IDE.S.120(a) Operations under VFR & cloud flying — flight and navigational instruments**MEANS OF MEASURING AND DISPLAYING MAGNETIC HEADING**

The means of measuring and displaying magnetic direction should be a magnetic compass or equivalent.

AMC1 NCO.IDE.S.115(a)(2)&NCO.IDE.S.120(b) Operations under VFR & cloud flying — flight and navigational instruments**MEANS OF MEASURING AND DISPLAYING THE TIME**

A means of measuring and displaying the time in hours, minutes and seconds may be a wrist watch capable of the same functions.

AMC1 NCO.IDE.S.115(a)(3)&NCO.IDE.S.120(c) Operations under VFR & cloud flying — flight and navigational instruments**CALIBRATION OF THE MEANS FOR MEASURING AND DISPLAYING PRESSURE ALTITUDE**

- (a) The instrument measuring and displaying pressure altitude should be of a sensitive type calibrated in feet (ft), with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight.
- (b) Calibration in metres (m) is also acceptable.

AMC1 NCO.IDE.S.115(a)(4)&NCO.IDE.S.120(d) Operations under VFR & cloud flying — flight and navigational instruments**CALIBRATION OF THE INSTRUMENT INDICATING AIRSPEED**

- (a) The instrument indicating airspeed should be calibrated in knots (kt).
- (b) Calibration in kilometres per hour (kph) or in miles per hour (mph) is also acceptable.

AMC1 NCO.IDE.S.115(b)(2) Operations under VFR — flight and navigational instruments**SLIP INDICATION**

The means of measuring and displaying slip may be a yaw string for operations under VFR.

GM1 NCO.IDE.S.115(b) Operations under VFR — flight and navigational instruments**CONDITIONS WHERE THE SAILPLANE CANNOT BE MAINTAINED IN A DESIRED ATTITUDE WITHOUT REFERENCE TO ONE OR MORE ADDITIONAL INSTRUMENTS**

Sailplanes operating in conditions where the sailplane cannot be maintained in a desired attitude without reference to one or more additional instruments means a condition that is still under VFR (under VMC) though where there is no external reference such as the natural horizon or a coastline, that would allow the attitude to be maintained. Such conditions may occur over water, a desert or snow-covered areas where the colour of the surface cannot be distinguished from the colour of the sky and therefore no external reference is available. Cloud flying is not considered to be one of these conditions.

NCO.IDE.S.120 Cloud flying — flight and navigational instruments

Sailplanes performing cloud flying shall be equipped with a means of measuring and displaying the following:

- (a) magnetic heading;
- (b) time in hours, minutes and seconds;
- (c) pressure altitude;
- (d) indicated airspeed;
- (e) vertical speed; and
- (f) attitude or turn and slip.

NCO.IDE.S.125 Seats and restraint systems

- (a) Sailplanes shall be equipped with:
 - (1) a seat for each person on board; and
 - (2) a seat belt with upper torso restraint system for each seat according to the AFM.
- (b) A seat belt with upper torso restraint system shall have a single point release.

AMC1 NCO.IDE.S.125 Seats and restraint systems**UPPER TORSO RESTRAINT SYSTEM**

- (a) A seat belt with upper torso restraint system should have four anchorage points and should include shoulder straps (two anchorage points) and a seat belt (two anchorage points), which may be used independently.
- (b) A restraint system having five anchorage points is deemed to be compliant to the requirement for seat belt with upper torso restraint system with four anchorage points.

NCO.IDE.S.130 Supplemental oxygen

Sailplanes operated at pressure altitudes above 10 000 ft shall be equipped with an oxygen storage and dispensing apparatus carrying enough breathing oxygen to supply:

- (a) crew members for any period in excess of 30 minutes when the pressure altitude will be between 10 000 ft and 13 000 ft; and
- (b) all crew members and passengers for any period that the pressure altitude will be above 13 000 ft.

NCO.IDE.S.135 Flight over water

The pilot-in-command of a sailplane operated over water shall determine the risks to survival of the occupants of the sailplane in the event of a ditching, based on which he/she shall determine the carriage of:

- (a) a life-jacket, or equivalent individual floatation device, for each person on board, that shall be worn or stowed in a position that is readily accessible from the seat of the person for whose use it is provided;
- (b) an emergency locator transmitter (ELT) or a personal locator beacon (PLB), carried by a crew member or a passenger, capable of transmitting simultaneously on 121,5 MHz and 406 MHz; and
- (c) equipment for making distress signals, when operating a flight:
 - (1) over water beyond gliding distance from land; or
 - (2) where the take-off or approach path is so disposed over water that in the event of a mishap there would be a likelihood of ditching.

AMC1 NCO.IDE.S.135 Flight over water**MEANS OF ILLUMINATION FOR LIFE-JACKETS**

Each life-jacket or equivalent individual flotation device should be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

RISK ASSESSMENT

- (a) When conducting the risk assessment, the pilot-in-command should base his/her decision, as far as is practicable, on the Implementing Rules and AMCs applicable to the operation of the sailplane.
- (b) The pilot-in-command should, for determining the risk, take the following operating environment and conditions into account:
 - (1) sea state;
 - (2) sea and air temperatures;
 - (3) the distance from land suitable for making an emergency landing; and
 - (4) the availability of search and rescue facilities.

GM1 NCO.IDE.S.135(a) Flight over water**SEAT CUSHIONS**

Seat cushions are not considered to be flotation devices.

AMC1 NCO.IDE.S.135(b) Flight over water**BATTERIES**

- (a) All batteries used in ELTs or PLBs should be replaced (or recharged, if the battery is rechargeable) when the equipment has been in use for more than 1 cumulative hour or in the following cases:
 - (1) Batteries specifically designed for use in ELTs and having an airworthiness release certificate (EASA Form 1 or equivalent) should be replaced (or recharged, if the battery is rechargeable) before the end of their useful life in accordance with the maintenance instructions applicable to the ELT.
 - (2) Standard batteries manufactured in accordance with an industry standard and not having an airworthiness release certificate (EASA Form 1 or equivalent), when used in ELTs should be replaced (or recharged, if the battery is rechargeable) when 50 % of their useful life (or for rechargeable, 50 % of their useful life of charge), as established by the battery manufacturer, has expired.
 - (3) All batteries used in PLBs should be replaced (or recharged, if the battery is rechargeable) when 50 % of their useful life (or for rechargeable, 50 % of their useful life of charge), as established by the battery manufacturer, has expired.
 - (4) The battery useful life (or useful life of charge) criteria in (1),(2) and (3) do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.
- (b) The new expiry date for a replaced (or recharged) battery should be legibly marked on the outside of the equipment.

AMC2 NCO.IDE.S.135(b) Flight over water**TYPES OF ELT AND GENERAL TECHNICAL SPECIFICATIONS**

- (a) The ELT required by this provision should be one of the following:
 - (1) Automatic fixed (ELT(AF)). An automatically activated ELT that is permanently attached to an aircraft and is designed to aid SAR teams in locating the crash site.
 - (2) Automatic portable (ELT(AP)). An automatically activated ELT that is rigidly attached to an aircraft before a crash, but is readily removable from the aircraft after a crash. It functions as an ELT during the crash sequence. If the ELT does not employ an integral antenna, the aircraft-mounted antenna may be disconnected and an auxiliary antenna (stored 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 SAR teams in locating the crash site or survivor(s).
 - (3) Automatic Deployable (ELT(AD)). An ELT that is rigidly attached to the aircraft before the crash and that is automatically ejected, deployed and activated by an impact, and, in some cases, also by hydrostatic sensors. Manual deployment is also provided. This type of ELT should float in water and is intended to aid SAR teams in locating the crash site.

- (4) Survival ELT (ELT(S)). An ELT that is removable from an aircraft, stowed so as to facilitate its ready use in an emergency and manually activated by a survivor. An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed either to be tethered to a life-raft or a survivor.
- (b) To minimise the possibility of damage in the event of crash impact, the automatic ELT should be rigidly fixed to the aircraft structure, as far aft as is practicable, with its antenna and connections arranged so as to maximise the probability of the signal being transmitted after a crash.
- (c) Any ELT carried should operate in accordance with the relevant provisions of ICAO Annex 10, Volume III, and should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

AMC3 NCO.IDE.S.135(b) Flight over water

PLB TECHNICAL SPECIFICATIONS

- (a) A personal locator beacon (PLB) should have a built-in GNSS receiver with a cosmicheskaya sistyema poiska aviarynich sudov — search and rescue satellite-aided tracking (COSPAS-SARSAT) type approval number. However, devices with a COSPAS-SARSAT number belonging to series 700 are excluded as this series of numbers identifies the special-use beacons not meeting all the technical requirements and all the tests specified by COSPAS-SARSAT.
- (b) Any PLB carried should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

AMC4 NCO.IDE.S.135(b) Flight over water

BRIEFING ON PLB USE

When a PLB is carried by a passenger, he/she should be briefed on its characteristics and use by the pilot-in-command before the flight.

GM1 NCO.IDE.S.135(b) Flight over water

TERMINOLOGY

- (a) An ELT is a generic term describing equipment that broadcasts distinctive signals on designated frequencies and, depending on application, may be activated by impact or may be manually activated.
- (b) A PLB is an emergency beacon other than an ELT that broadcasts distinctive signals on designated frequencies, is standalone, portable and is manually activated by the survivors.

NCO.IDE.S.140 Survival equipment

Sailplanes operated over areas in which search and rescue would be especially difficult shall be equipped with such signalling devices and life-saving equipment as appropriate to the area overflown.

AMC1 NCO.IDE.S.140 Survival equipment

GENERAL

Sailplanes operated across land areas in which search and rescue would be especially difficult should be equipped with the following:

- (a) signalling equipment to make the distress signals;
- (b) at least one ELT(S) or a PLB; and
- (c) additional survival equipment for the route to be flown taking account of the number of persons on board.

AMC2 NCO.IDE.S.140 Survival equipment

ADDITIONAL SURVIVAL EQUIPMENT

- (a) The following additional survival equipment should be carried when required:
 - (1) 500 ml of water;
 - (2) one knife;
 - (3) first-aid equipment; and
 - (4) one set of air/ground codes.
- (b) If any item of equipment contained in the above list is already carried on board the sailplane in accordance with another requirement, there is no need for this to be duplicated.

GM1 NCO.IDE.S.140 Survival equipment

SIGNALLING EQUIPMENT

The signalling equipment for making distress signals is described in ICAO Annex 2, Rules of the Air.

GM2 NCO.IDE.S.140 Survival equipment

AREAS IN WHICH SEARCH AND RESCUE WOULD BE ESPECIALLY DIFFICULT

The expression 'areas in which search and rescue would be especially difficult' should be interpreted, in this context, as meaning:

- (a) areas so designated by the authority responsible for managing search and rescue; or
- (b) areas that are largely uninhabited and where:
 - (1) the authority referred to in (a) has not published any information to confirm whether search and rescue would be or would not be especially difficult; and
 - (2) the authority referred to in (a) does not, as a matter of policy, designate areas as being especially difficult for search and rescue.

NCO.IDE.S.145 Radio communication equipment

- (a) Where required by the airspace being flown sailplanes shall be equipped with radio communication equipment capable of conducting two-way communication with those aeronautical stations or those frequencies to meet airspace requirements.
- (b) Radio communication equipment, if required by (a), shall provide for communication on the aeronautical emergency frequency 121,5 MHz.

NCO.IDE.S.150 Navigation equipment

Sailplanes shall be equipped with any navigation equipment necessary to proceed in accordance with:

- (a) the ATS flight plan if applicable; and
- (b) the applicable airspace requirements.

GM1 NCO.IDE.S.150 Navigation equipment**APPLICABLE AIRSPACE REQUIREMENTS**

For sailplanes being operated under European air traffic control, the applicable airspace requirements include the Single European Sky legislation.

NCO.IDE.S.155 Transponder

When required by the airspace being flown, sailplanes shall be equipped with a secondary surveillance radar (SSR) transponder with all the required capabilities.

AMC1 NCO.IDE.S.155 Transponder**GENERAL**

- (a) The secondary surveillance radar (SSR) transponders of sailplanes being operated under European air traffic control should comply with any applicable Single European Sky legislation.
- (b) If the Single European Sky legislation is not applicable, the SSR transponders should operate in accordance with the relevant provisions of Volume IV of ICAO Annex 10.

SECTION 4
Balloons**NCO.IDE.B.100 Instruments and equipment — general**

- (a) Instruments and equipment required by this Subpart shall be approved in accordance with the applicable airworthiness requirements if they are:
 - (1) used by the flight crew to determine the flight path;
 - (2) used to comply with NCO.IDE.B.145; or
 - (3) installed in the balloon.
- (b) The following items, when required by this Subpart, do not need an equipment approval:
 - (1) independent portable lights;
 - (2) an accurate time piece;
 - (3) first-aid kit;
 - (4) survival and signalling equipment.
- (c) Instruments and equipment not required by this Subpart as well as any other equipment that is not required by other Annexes, but is carried on a flight, shall comply with the following:
 - (1) the information provided by these instruments or equipment shall not be used by the flight crew to comply with Annex I to Regulation (EC) No 216/2008; and
 - (2) the instruments and equipment shall not affect the airworthiness of the balloon, even in the case of failures or malfunction.
- (d) Instruments and equipment shall be readily operable or accessible from the station where the flight crew member that needs to use it is assigned.
- (e) All required emergency equipment shall be easily accessible for immediate use.

GM1 NCO.IDE.B.100(a) Instruments and equipment — general**APPLICABLE AIRWORTHINESS REQUIREMENTS**

The applicable airworthiness requirements for approval of instruments and equipment required by this Part are the following:

- (a) Regulation (EU) No 748/2012 for balloons registered in the EU; and
- (b) Airworthiness requirements of the state of registry for balloons registered outside the EU.

GM1 NCO.IDE.B.100(b) Instruments and equipment — general**REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS**

The functionality of non-installed instruments and equipment required by this Subpart and that do not need an equipment approval, as listed in NCO.IDE.B.100(b), should be checked against recognised industry standards appropriate to the intended purpose. The operator is responsible for ensuring the maintenance of these instruments and equipment.

GM1 NCO.IDE.B.100(c) Instruments and equipment — general

NOT REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS, BUT ARE CARRIED ON A FLIGHT

- (a) The provision of this paragraph does not exempt any installed instrument or item of equipment from complying with the applicable airworthiness requirements. In this case, the installation should be approved as required in the applicable airworthiness requirements and should comply with the applicable Certification Specifications.
- (b) The failure of additional non-installed instruments or equipment not required by this Part or by the applicable airworthiness requirements or any applicable airspace requirements should not adversely affect the airworthiness and/or the safe operation of the balloon. Examples may be portable electronic devices carried by crew members or passengers.

NCO.IDE.B.105 Minimum equipment for flight

A flight shall not be commenced when any of the balloon instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless:

- (a) the balloon is operated in accordance with the MEL, if established; or
- (b) the balloon is subject to a permit to fly issued in accordance with the applicable airworthiness requirements.

NCO.IDE.B.110 Operating lights

Balloons operated at night shall be equipped with:

- (a) anti-collision lights;
- (b) a means to provide adequate illumination for all instruments and equipment essential to the safe operation of the balloon; and
- (c) an independent portable light.

AMC1 NCO.IDE.B.110 Operating lights**ANTI-COLLISION LIGHTS**

An acceptable means of compliance is the anti-collision light required for free manned balloons certified for VFR at night in accordance with CS 31HB/GB.

ILLUMINATION FOR INSTRUMENTS AND EQUIPMENT

A means of providing adequate illumination to instruments and equipment essential to the safe operation of the balloon may be an independent portable light.

NCO.IDE.B.115 Operations under VFR — flight and navigational instruments and associated equipment

Balloons operated under VFR by day shall be equipped with the following:

- (a) a means of displaying drift direction; and
- (b) a means of measuring and displaying:
 - (1) time in hours, minutes and seconds;
 - (2) vertical speed, if required by the AFM; and
 - (3) pressure altitude, if required by the AFM, if required by airspace requirements or when altitude needs to be controlled for the use of oxygen.

AMC1 NCO.IDE.B.115(a) Operations under VFR — flight and navigational instruments**MEANS OF DISPLAYING DRIFT DIRECTION**

The drift direction may be determined by using a map and reference to visual landmarks.

AMC1 NCO.IDE.B.115(b)(1) Operations under VFR — flight and navigational instruments**MEANS OF MEASURING AND DISPLAYING THE TIME**

A means of measuring and displaying the time in hours, minutes and seconds may be a wrist watch capable of the same functions.

GM1 NCO.IDE.B.115(b)(2) Operations under VFR — flight and navigational instruments**MEANS OF MEASURING AND DISPLAYING VERTICAL SPEED**

The necessity of a vertical speed indicator depends on the balloon design. Some envelope shapes have a high drag and will therefore not develop a high ascent/descent speed. Such balloons usually do not require a vertical speed indicator. More slender envelope shapes such as special shape balloons may have a significantly lower drag. Their ascent/descent speed is usually limited to a certain value so that controllability of the balloon is maintained. To be able to stay within this limitation of the AFM, a vertical speed indicator is required for such balloons.

GM1 NCO.IDE.B.115(b)(3) Operations under VFR — flight and navigational instruments and associated equipment**MEANS OF MEASURING AND DISPLAYING PRESSURE ALTITUDE**

A means of measuring and displaying pressure altitude is needed when required by ATC, or by Regulation (EU) 923/2012, or when altitude needs to be checked for flights where oxygen is used, or the limitations in the AFM require to limit altitude and/or rate of climb/descent.

NCO.IDE.B.120 First-aid kit

- (a) Balloons shall be equipped with a first-aid kit.
- (b) The first-aid kit shall be:
 - (1) readily accessible for use; and
 - (2) kept up-to-date.

AMC1 NCO.IDE.B.120 First-aid kit

CONTENT OF FIRST-AID KITS

- (a) First-aid kits should be equipped with appropriate and sufficient medications and instrumentation. However, these kits should be amended by the operator according to the characteristics of the operation (scope of operation, flight duration, number and demographics of passengers, etc.).
- (b) The following should be included in the FAKs:
 - (1) bandages (assorted sizes),
 - (2) burns dressings (large and small),
 - (3) wound dressings (large and small),
 - (4) adhesive dressings (assorted sizes),
 - (5) antiseptic wound cleaner,
 - (6) safety scissors,
 - (7) disposable gloves.

AMC2 NCO.IDE.B.120 First-aid kit

MAINTENANCE OF FIRST-AID KIT

To be kept up-to-date, first-aid kits should be:

- (a) inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use;
- (b) replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant; and
- (c) replenished after use in-flight at the first opportunity where replacement items are available.

NCO.IDE.B.121 Supplemental oxygen

Balloons operated at pressure altitudes above 10 000 ft shall be equipped with an oxygen storage and dispensing apparatus carrying enough breathing oxygen to supply:

- (a) crew members for any period in excess of 30 minutes when the pressure altitude will be between 10 000 ft and 13 000 ft; and
- (b) all crew members and passengers for any period that the pressure altitude will be above 13 000 ft.

NCO.IDE.B.125 Hand fire extinguishers

Hot air -balloons shall be equipped with at least one hand fire extinguisher, if required by the applicable certification specifications.

AMC1 NCO.IDE.B.125 Hand fire extinguishers**CERTIFICATION SPECIFICATIONS**

The applicable Certification Specification for hot-air balloons should be CS-31HB or equivalent.

NCO.IDE.B.130 Flight over water

The pilot-in-command of a balloon operated over water shall determine the risks to survival of the occupants of the balloon in the event of a ditching, based on which he/she shall determine the carriage of:

- (a) a life-jacket for each person on board, or equivalent individual floatation device for each person on board younger than 24 months, that shall be worn or stowed in a position that is readily accessible from the station of the person for whose use it is provided;
- (b) when carrying more than 6 persons, an emergency locator transmitter (ELT) capable of transmitting simultaneously on 121,5 MHz and 406 MHz;
- (c) when carrying up to 6 persons, an ELT or a personal locator beacon (PLB), carried by a crew member or a passenger, capable of transmitting simultaneously on 121,5 MHz and 406 MHz; and
- (d) equipment for making the distress signals.

AMC1 NCO.IDE.B.130 Flight over water**MEANS OF ILLUMINATION FOR LIFE-JACKETS**

Each life-jacket or equivalent individual flotation device should be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

RISK ASSESSMENT

- (a) When conducting the risk assessment, the pilot-in-command should base his/her decision, as far as is practicable, on the Implementing Rules and AMCs applicable to the operation of the balloon.
- (b) The pilot-in-command should, for determining the risk, take the following operating environment and conditions into account:
 - (1) sea state;
 - (2) sea and air temperatures;
 - (3) the distance from land suitable for making an emergency landing; and
 - (4) the availability of search and rescue facilities.

AMC1 NCO.IDE.B.130(b) Flight over water**BATTERIES**

- (a) All batteries used in ELTs or PLBs should be replaced (or recharged, if the battery is rechargeable) when the equipment has been in use for more than 1 cumulative hour or in the following cases:
 - (1) Batteries specifically designed for use in ELTs and having an airworthiness release certificate (EASA Form 1 or equivalent) should be replaced (or recharged, if the battery is rechargeable) before the end of their useful life in accordance with the maintenance instructions applicable to the ELT.
 - (2) Standard batteries manufactured in accordance with an industry standard and not having an airworthiness release certificate (EASA Form 1 or equivalent), when used in ELTs should be replaced (or recharged, if the battery is rechargeable) when 50 % of their useful life (or

for rechargeable, 50 % of their useful life of charge), as established by the battery manufacturer, has expired.

- (3) All batteries used in PLBs should be replaced (or recharged, if the battery is rechargeable) when 50 % of their useful life (or for rechargeable, 50 % of their useful life of charge), as established by the battery manufacturer, has expired.
 - (4) The battery useful life (or useful life of charge) criteria in (1),(2) and (3) do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.
- (b) The new expiry date for a replaced (or recharged) battery should be legibly marked on the outside of the equipment.

AMC2 NCO.IDE.B.130(b) Flight over water

TYPES OF ELT AND GENERAL TECHNICAL SPECIFICATIONS

- (a) The ELT required by this provision should be one of the following:
- (1) Automatic fixed (ELT(AF)). An automatically activated ELT that is permanently attached to an aircraft and is designed to aid SAR teams in locating the crash site.
 - (2) Automatic portable (ELT(AP)). An automatically activated ELT that is rigidly attached to an aircraft before a crash, but is readily removable from the aircraft after a crash. It functions as an ELT during the crash sequence. If the ELT does not employ an integral antenna, the aircraft-mounted antenna may be disconnected and an auxiliary antenna (stored 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 SAR teams in locating the crash site or survivor(s).
 - (3) Automatic deployable (ELT(AD)). An ELT that is rigidly attached to the aircraft before the crash and which is automatically ejected, deployed and activated by an impact, and, in some cases, also by hydrostatic sensors. Manual deployment is also provided. This type of ELT should float in water and is intended to aid SAR teams in locating the crash site.
 - (4) Survival ELT (ELT(S)). An ELT that is removable from an aircraft, stowed so as to facilitate its ready use in an emergency and manually activated by a survivor. An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed either to be tethered to a life-raft or a survivor.
- (b) To minimise the possibility of damage in the event of crash impact, the automatic ELT should be rigidly fixed to the aircraft structure, as far aft as is practicable, with its antenna and connections arranged so as to maximise the probability of the signal being transmitted after a crash.
- (c) Any ELT carried should operate in accordance with the relevant provisions of ICAO Annex 10, Volume III, and should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

AMC3 NCO.IDE.B.130(b) Flight over water

PLB TECHNICAL SPECIFICATIONS

- (a) A personal locator beacon (PLB) should have a built-in GNSS receiver with a *cosmicheskaya sistyema poiska avariynich sudov* — search and rescue satellite-aided tracking (COSPAS-SARSAT) type approval number. However, devices with a COSPAS-SARSAT number belonging to series 700 are excluded as this series of numbers identifies the special-use beacons not meeting all the technical requirements and all the tests specified by COSPAS-SARSAT.

- (b) Any PLB carried should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

AMC4 NCO.IDE.B.130(b) Flight over water**BRIEFING ON PLB USE**

When a PLB is carried by a passenger, he/she should be briefed on its characteristics and use by the pilot-in-command before the flight.

GM1 NCO.IDE.B.130(b) Flight over water**TERMINOLOGY**

- (a) An ELT is a generic term describing equipment that broadcasts distinctive signals on designated frequencies and, depending on application, may be activated by impact or may be manually activated.
- (b) A PLB is an emergency beacon other than an ELT that broadcasts distinctive signals on designated frequencies, is standalone, portable and is manually activated by the survivors.

GM1 NCO.IDE.B.130(d) Survival equipment**SIGNALLING EQUIPMENT**

The signalling equipment for making distress signals is described in ICAO Annex 2, Rules of the Air.

NCO.IDE.B.135 Survival equipment

Balloons operated over areas in which search and rescue would be especially difficult shall be equipped with such signalling devices and life-saving equipment as appropriate to the area overflown.

AMC1 NCO.IDE.B.135 Survival equipment**GENERAL**

Balloons operated across land areas in which search and rescue would be especially difficult should be equipped with the following:

- (a) signalling equipment to make the distress signals;
- (b) at least one ELT(S) or a PLB; and
- (c) additional survival equipment for the route to be flown taking account of the number of persons on board.

AMC2 NCO.IDE.B.135 Survival equipment**ADDITIONAL SURVIVAL EQUIPMENT**

- (a) The following additional survival equipment should be carried when required:
 - (1) 500 ml of water for each four, or fraction of four, persons on board;
 - (2) one knife;
 - (3) first-aid equipment; and
 - (4) one set of air/ground codes.
- (b) If any item of equipment contained in the above list is already carried on board the balloon in accordance with another requirement, there is no need for this to be duplicated.

GM1 NCO.IDE.B.135 Survival equipment**AREAS IN WHICH SEARCH AND RESCUE WOULD BE ESPECIALLY DIFFICULT**

The expression 'areas in which search and rescue would be especially difficult' should be interpreted, in this context, as meaning:

- (a) areas so designated by the authority responsible for managing search and rescue; or
- (b) areas that are largely uninhabited and where:
 - (1) the authority referred to in (a) has not published any information to confirm whether search and rescue would be or would not be especially difficult; and
 - (2) the authority referred to in (a) does not, as a matter of policy, designate areas as being especially difficult for search and rescue.

NCO.IDE.B.140 Miscellaneous equipment

- (a) Balloons shall be equipped with protective gloves for each crew member.
- (b) Hot-air balloons shall be equipped with:
 - (1) an alternative source of ignition;
 - (2) a means of measuring and indicating fuel quantity;
 - (3) a fire blanket or fire resistant cover; and
 - (4) a drop line of at least 25 metres (m) in length.
- (c) Gas balloons shall be equipped with:
 - (1) a knife; and
 - (2) a drop line of at least 20 m in length made of natural fibre or electrostatic conductive material.

AMC1 NCO.IDE.B.140(b)(3) Miscellaneous equipment**FIRE BLANKET**

A fire blanket should comply with EN 1869 or equivalent. The size should be at least 1.5 m x 2 m. Smaller sizes are not recommended as they cannot sufficiently cover the source of developing propane fire.

AMC1 NCO.IDE.B.140 (c)(1) Miscellaneous equipment**KNIFE**

The knife, hook knife or equivalent, should be capable of cutting any control line or handling rope that is accessible to the pilot-in-command or a crew member from the basket.

NCO.IDE.B.145 Radio communication equipment

- (a) Where required by the airspace being flown, balloons shall be equipped with radio communication equipment capable of conducting two-way communication with those aeronautical stations or those frequencies to meet airspace requirements.
- (b) Radio communication equipment, if required by (a), shall provide for communication on the aeronautical emergency frequency 121,5 MHz.

GM1 NCO.IDE.B.145 Radio communication equipment**APPLICABLE AIRSPACE REQUIREMENTS**

For balloons being operated under European air traffic control, the applicable airspace requirements include the Single European Sky legislation.

NCO.IDE.B.150 Transponder

When required by the airspace being flown, balloons shall be equipped with a secondary surveillance radar (SSR) transponder with all the required capabilities.

AMC1 NCO.IDE.B.150 Transponder**GENERAL**

- (a) The secondary surveillance radar (SSR) transponders of balloons being operated under European air traffic control should comply with any applicable Single European Sky legislation.
- (b) If the Single European Sky legislation is not applicable, the SSR transponders should operate in accordance with the relevant provisions of Volume IV of ICAO Annex 10.

SUBPART E: SPECIFIC REQUIREMENTS

SECTION 1 General

NCO.SPEC.100 Scope

This subpart establishes specific requirements to be followed by a pilot-in-command conducting non-commercial specialised operations with other-than complex motor-powered aircraft.

AMC1 NCO.SPEC.100 Scope

CRITERIA

The pilot-in-command should consider the following criteria to determine whether an activity falls within the scope of specialised operations:

- (a) the aircraft is flown close to the surface to fulfil the mission;
- (b) abnormal manoeuvres are performed;
- (c) special equipment is necessary to fulfil the mission and which affects the manoeuvrability of the aircraft;
- (d) substances are released from the aircraft during the flight where these substances are either harmful or affect the manoeuvrability of the aircraft;
- (e) external loads or goods are lifted or towed; or
- (f) persons enter or leave the aircraft during flight.

GM1 NCO.SPEC.100 Scope

LIST OF SPECIALISED OPERATIONS

- (a) Specialised operations include the following activities:
 - (1) helicopter external loads operations;
 - (2) helicopter survey operations;
 - (3) human external cargo operations;
 - (4) parachute operations and skydiving;
 - (5) agricultural flights;
 - (6) aerial photography flights;
 - (7) glider towing;
 - (8) aerial advertising flights;
 - (9) calibration flights;
 - (10) construction work flights, including stringing power line operations, clearing saw operations;

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- (11) oil spill work;
 - (12) avalanche mining operations;
 - (13) survey operations, including aerial mapping operations, pollution control activity;
 - (14) news media flights, television and movie flights;
 - (15) special events flights, including such as flying display, competition flights;
 - (16) aerobatic flights;
 - (17) animal herding and rescue flights and veterinary dropping flights;
 - (18) maritime funeral operations;
 - (19) scientific research flights (other than those under Annex II of Regulation 216/2008); and
 - (20) cloud seeding.
- (b) For other operations, the pilot-in-command can apply the criteria specified in AMC1 NCO.SPEC.100 to determine whether an activity falls within the scope of specialised operations.

NCO.SPEC.105 Checklist

- (a) Before commencing a specialised operation, the pilot-in-command shall conduct a risk assessment, assessing the complexity of the activity to determine the hazards and associated risks inherent in the operation and establish mitigating measures.
- (b) A specialised operation shall be performed in accordance with a checklist. Based on the risk assessment, the pilot-in-command shall establish such checklist appropriate to the specialised activity and aircraft used, taking account of any section of this subpart.
- (c) The checklist that is relevant to the duties of the pilot-in-command, crew members and task specialists shall be readily accessible on each flight.
- (d) The checklist shall be regularly reviewed and updated, as appropriate.

GM1 NCO.SPEC.105 Checklist**DEVELOPMENT OF CHECKLISTS**

For developing the checklist, the pilot-in-command should duly take into account at least the following items:

- (a) nature and complexity of the activity:
 - (1) the nature of the flight and the risk exposure, e.g. low height;
 - (2) the complexity of the activity taking into account the necessary pilot skills and level of experience, ground support, safety and individual protective equipment;
 - (3) the operational environment and geographical area, e.g., congested hostile environment, mountainous areas, sea areas, or desert areas;
 - (4) the result of the risk assessment and evaluation;
- (b) aircraft and equipment:
 - (1) the category of aircraft to be used for the activity should be indicated, e.g. helicopter/aeroplane, single/multi-engined;
 - (2) all equipment required for the activity should be listed;
- (c) crew members:
 - (1) crew composition;
 - (2) minimum crew experience and training provisions; and
 - (3) recency provisions;
- (d) task specialists:
 - (1) description of the task specialists' function(s)
 - (2) minimum crew experience and training provisions; and
 - (3) recency provisions;
 - (4) briefing;
- (e) aircraft performance:

this chapter should detail the specific performance requirements to be applied, in order to ensure an adequate power margin;
- (f) normal procedures and emergency procedures:

- (1) operating procedures for the flight crew, including the coordination with task specialists;
- (2) ground procedures for the task specialists;
- (g) ground equipment:
this chapter should detail the nature, number and location of ground equipment required for the activity;
- (h) records:
it should be determined which records specific to these flight(s) are to be kept, such as task details, aircraft registration, pilot-in-command, flight times, weather and any remarks, including a record of occurrences affecting flight safety or the safety of persons or property on the ground.

GM2 NCO.SPEC.105 Checklists

TEMPLATE FORMS

The following templates are examples, which could be used for developing checklist.

- (a) Template Form A — Risk assessment (RA)

Date: RA of Responsible:
Purpose:
Type of operation and brief description:
Participants, working group:
Preconditions, assumptions and simplifications:
Data used:
Description of the analysis method:
External context:
<ul style="list-style-type: none"> Regulatory requirements Approvals Environmental conditions (visibility, wind, turbulence, contrast, light, elevation, etc.; unless evident from the checklists) Stakeholders and their potential interest
Internal context:
<ul style="list-style-type: none"> Type(s) of aircraft Personnel and qualifications Combination/similarity with other operations/SOPs Other RA used/considered/plugged in

Existing barriers and emergency preparedness:
Monitoring and follow up:
Description of the risk:
Risk evaluation:
Conclusions:

(b) Template Form B — Hazard identification (HI)

Date: HI of Responsible:

Phase of operation	Haz ref	Hazard / accidental event	Cause / threat	Current Treatment Measures (TM)	Further treatment required	TM ref	Comment

Haz ref: A unique number for hazards, e.g., for use in a database*TM ref:* A unique number for the treatment method

(c) Template Form C — Mitigating measures

Date:..... RA of Responsible:.....

Phase of operation	Haz ref	Hazard / accidental event	Current Treatment Measures (TM)/controls	TM ref	L	C	Further treatment required

Haz ref: A unique number for hazards, e.g., for use in a database

TM ref: A unique number for the treatment method

L: Likelihood (probability)

C: Consequence

(d) Template register A — Risk register

Ref	Operation / Procedure	Ref	Generic hazard	Ref	Accidental event	Treatment / control	L	C	Monitoring

L: Likelihood (probability)

C: Consequence

NCO.SPEC.110 Pilot-in-command responsibilities and authority

Whenever crew members or task specialists are involved in the operation, the pilot-in-command shall

- (a) ensure compliance of crew members and task specialists with NCO.SPEC.115 and NCO.SPEC.120;
- (b) not commence a flight if any crew member or task specialist is incapacitated from performing duties by any cause such as injury, sickness, fatigue or the effects of any psychoactive substance;
- (c) not continue a flight beyond the nearest weather-permissible aerodrome or operating site when any crew member or task specialist's capacity to perform duties is significantly reduced from causes such as fatigue, sickness or lack of oxygen;
- (d) ensure that crew members and task specialists comply with the laws, regulations and procedures of those States where operations are conducted;
- (e) ensure that all crew members and task specialists are able to communicate with each other in a common language; and
- (f) ensure that task specialists and crew members use supplemental oxygen continuously whenever the cabin altitude exceeds 10 000 ft for a period of more than 30 minutes and whenever the cabin altitude exceeds 13 000 ft.

NCO.SPEC.115 Crew responsibilities

- (a) The crew member shall be responsible for the proper execution of his/her duties. Crew duties shall be specified in the checklist.
- (b) Except for balloons, during critical phases of flight or whenever deemed necessary by the pilot-in-command in the interest of safety, the crew member shall be restrained at his/her assigned station unless otherwise specified in the checklist.
- (c) During flight, the flight crew member shall keep his/her safety belt fastened while at his/her station.
- (d) During flight, at least one qualified flight crew member shall remain at the controls of the aircraft at all times.
- (e) The crew member shall not undertake duties on an aircraft:
 - (1) if he/she knows or suspects that he/she is suffering from fatigue as referred to in 7.f. of Annex IV to Regulation (EC) No 216/2008 or feels otherwise unfit to perform his/her duties; or
 - (2) when under the influence of psychoactive substances or alcohol or for other reasons as referred to in 7.g of Annex IV to Regulation (EC) No 216/2008.
- (f) The crew member who undertakes duties for more than one operator shall:
 - (1) maintain his/her individual records regarding flight and duty times and rest periods as referred to in Annex III (Part-ORO), Subpart FTL to Regulation (EU) No 965/2012, if applicable; and
 - (2) provide each operator with the data needed to schedule activities in accordance with the applicable FTL requirements.
- (g) The crew member shall report to the pilot-in-command:
 - (1) any fault, failure, malfunction or defect, which he/she believes may affect the airworthiness or safe operation of the aircraft, including emergency systems; and
 - (2) any incident that was endangering, or could endanger, the safety of the operation.

NCO.SPEC.120 Task specialists responsibilities

- (a) The task specialist shall be responsible for the proper execution of his/her duties. Task specialists' duties shall be specified in the checklist.
- (b) Except for balloons, during critical phases of flight or whenever deemed necessary by the pilot-in-command in the interest of safety, the task specialist shall be restrained at his/her assigned station unless otherwise specified in the checklist.
- (c) The task specialist shall ensure that he/she is restrained when carrying out specialised tasks with external doors opened or removed.
- (d) The task specialist shall report to the pilot-in-command:
 - (1) any fault, failure, malfunction or defect, which he/she believes may affect the airworthiness or safe operation of the aircraft, including emergency systems; and
 - (2) any incident that was endangering, or could endanger, the safety of the operation.

NCO.SPEC.125 Safety briefing

- (a) Before take-off, the pilot-in-command shall brief task specialists on:
 - (1) emergency equipment and procedures;
 - (2) operational procedures associated with the specialised task before each flight or series of flights.
- (b) The briefing referred to in (a)(2) may not be required if task specialists have been instructed on the operational procedures before the start of the operating season in that calendar year.

AMC1 NCO.SPEC.125 Safety briefing**TASK SPECIALISTS**

- (a) Safety briefings should ensure that task specialists are familiar with all aspects of the operation, including their responsibilities.
- (b) Such briefings should include, as appropriate:
 - (1) behaviour on the ground and in-flight, including emergency procedures;
 - (2) procedures for boarding and disembarking;
 - (3) procedures for loading and unloading the aircraft;
 - (4) use of doors in normal and emergency operations;
 - (5) use of communication equipment and hand signals;
 - (6) precautions in case of a landing on sloping ground; and
 - (7) in addition to the items listed from (b)(1) to (b)(6) before take-off:
 - (i) location of emergency exits;
 - (ii) restrictions regarding smoking;
 - (iii) restrictions regarding the use of portable electronic equipment; and
 - (iv) stowage of tools and hand baggage.

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- (c) Briefings may be given as a verbal presentation or by issuing the appropriate procedures and instructions in written form. Before commencement of the flight, their understanding should be confirmed.

NCO.SPEC.130 Minimum obstacle clearance altitudes — IFR flights

The pilot-in-command shall establish minimum flight altitudes for each flight providing the required terrain clearance for all route segments to be flown in IFR. The minimum flight altitudes shall not be lower than those published by the State overflown.

NCO.SPEC.135 Fuel and oil supply — aeroplanes

NCO.OP.125(a)(1)(i) does not apply to sailplane-towing, flying display, aerobatic flights or competition flights.

NCO.SPEC.140 Fuel and oil supply — helicopters

Notwithstanding NCO.OP.126(a)(1), the pilot-in-command of a helicopter may only commence a VFR flight by day remaining within 25 NM of the aerodrome/operating site of departure with reserve fuel of not less than 10 minutes at best-range-speed.

NCO.SPEC.145 Simulated situations in flight

Unless a task specialist is on-board the aircraft for training, the pilot-in-command shall, when carrying task specialists, not simulate:

- (a) situations that require the application of abnormal or emergency procedures; or
- (b) flight in instrument meteorological conditions (IMC).

NCO.SPEC.150 Ground proximity detection

If installed, the ground proximity warning system may be disabled during those specialised tasks, which by their nature require the aircraft to be operated within a distance from the ground below that which would trigger the ground proximity warning system.

NCO.SPEC.155 Airborne collision avoidance system (ACAS II)

Notwithstanding NCO.OP.200, the ACAS II may be disabled during those specialised tasks, which by their nature require the aircraft to be operated within a distance from each other below that which would trigger the ACAS.

NCO.SPEC.160 Release of dangerous goods

The pilot-in-command shall not operate an aircraft over congested areas of cities, towns or settlements or over an open-air assembly of persons when releasing dangerous goods.

NCO.SPEC.165 Carriage and use of weapons

- (a) The pilot-in-command shall ensure that, when weapons are carried on a flight for the purpose of a specialised task, these are secured when not in use.
- (b) The task specialist using the weapon shall take all necessary measures to prevent the aircraft and persons on board or on the ground from being endangered.

NCO.SPEC.170 Performance and operating criteria — aeroplanes

When operating an aeroplane at a height of less than 150 m (500 ft) above a non-congested area, for operations of aeroplanes that are not able to sustain level flight in the event of a critical engine failure, the pilot-in-command shall have:

- (a) established operational procedures to minimise the consequences of an engine failure; and
- (b) briefed all crew members and task specialists on board on the procedures to be carried out in the event of a forced landing.

NCO.SPEC.175 Performance and operating criteria — helicopters

- (a) The pilot-in-command may operate an aircraft over congested areas provided that:
 - (1) the helicopter is certified in category A or B; and
 - (2) safety measures are established to prevent undue hazard to persons or property on the ground
- (b) The pilot-in-command shall have:
 - (1) established operational procedures to minimise the consequences of an engine failure; and
 - (2) briefed all crew members and task specialists on board on the procedures to be carried out in the event of a forced landing.
- (c) The pilot-in-command shall ensure that the mass at take-off, landing or hover shall not exceed the maximum mass specified for:
 - (1) a hover out of ground effect (HOGE) with all engines operating at the appropriate power rating; or
 - (2) if conditions prevail that a HOGE is not likely to be established, the helicopter mass shall not exceed the maximum mass specified for a hover in ground effect (HIGE) with all engines operating at the appropriate power rating, provided prevailing conditions allow a hover in ground effect at the maximum specified mass.

GM1 NCO.SPEC.175(c) Performance and operating criteria — helicopters**GENERAL**

- (a) Even when the surface allows a hover in ground effect (HIGE), the likelihood of, for example, dust or blowing snow may necessitate hover out of ground effect (HOGE) performance.
- (b) Wind conditions on some sites, particularly downdraft in mountainous areas, may require a reduction in the helicopter mass in order to ensure that an out of ground effect hover can be achieved at the operational site in the conditions prevailing.

SECTION 2
Helicopter external sling load operations (HESLO)

NCO.SPEC.HESLO.100 Checklist

The checklist for HESLO shall contain:

- (a) normal, abnormal and emergency procedures;
- (b) relevant performance data;
- (c) required equipment;
- (d) any limitations; and
- (e) responsibilities and duties of the pilot-in-command, and, if applicable, crew members and task specialists.

GM1 NCO.SPEC.HESLO.100 Checklist

REFERENCES

The following references to the AMC and GM of Annex VIII (Part-SPO) provide further guidance for the development of checklists.

- (a) AMC1 SPO.SPEC.HESLO.100 provides a generic framework for the development of standard operating procedures (SOP) for HESLO operations. This AMC can be regarded as a good practice example for developing the checklist for HESLO operations.
- (b) GM1 SPO.SPEC.HESLO.100 provides guidance for initial pilot training for HESLO types 1, 2, 3, 4 and 5.

NCO.SPEC.HESLO.105 Specific HESLO equipment

The helicopter shall be equipped with at least:

- (a) one cargo safety mirror or alternative means to see the hook(s)/load; and
- (b) one load meter, unless there is another method of determining the weight of the load.

NCO.SPEC.HESLO.110 Transportation of dangerous goods

The operator transporting dangerous goods to or from unmanned sites or remote locations shall apply to the competent authority for an exemption from the provisions of the Technical Instructions if they intend not to comply with the requirements of those Instructions.

SECTION 3
Human external cargo operations (HEC)

NCO.SPEC.HEC.100 Checklist

The checklist for HEC shall contain:

- (a) normal, abnormal and emergency procedures;
- (b) relevant performance data;
- (c) required equipment;
- (d) any limitations; and
- (e) responsibilities and duties of the pilot-in-command, and, if applicable, crew members and task specialists.

GM1 NCO.SPEC.HEC.100 Checklist

REFERENCES

AMC1 SPO.SPEC.HEC.100 of Annex VIII (Part-SPO) provides a generic framework for the development of SOP for HEC operations. This AMC can be regarded as a good practice example for developing the checklist for HEC operations.

NCO.SPEC.HEC.105 Specific HEC equipment

- (a) The helicopter shall be equipped with:
 - (1) hoist operations equipment or cargo hook;
 - (2) one cargo safety mirror or alternative means to see the hook; and
 - (3) one load meter, unless there is another method of determining the weight of the load.
- (b) The installation of all hoist and cargo hook equipment and any subsequent modifications shall have an airworthiness approval appropriate to the intended function.

SECTION 4
Parachute operations (PAR)

NCO.SPEC.PAR.100 Checklist

The checklist for PAR shall contain:

- (a) normal, abnormal and emergency procedures;
- (b) relevant performance data;
- (c) required equipment;
- (d) any limitations; and
- (e) responsibilities and duties of the pilot-in-command, and, if applicable, crew members and task specialists.

NCO.SPEC.PAR.105 Carriage of crew members and task specialists

The requirement laid down in NCO.SPEC.120(c) shall not be applicable for task specialists performing parachute jumping.

NCO.SPEC.PAR.110 Seats

Notwithstanding NCO.IDE.A.140(a)(1) and NCO.IDE.H.140(a)(1), the floor of the aircraft may be used as a seat, provided means are available for the task specialist to hold or strap on.

NCO.SPEC.PAR.115 Supplemental oxygen

Notwithstanding NCO.SPEC.110(f), the requirement to use supplemental oxygen shall not be applicable for crew members other than the pilot-in-command and for task specialists carrying out duties essential to the specialised task, whenever the cabin altitude:

- (a) exceeds 13 000 ft, for a period of not more than 6 minutes; or
- (b) exceeds 15 000 ft, for a period of not more than 3 minutes.

NCO.SPEC.PAR.120 Release of dangerous goods

Notwithstanding NCO.SPEC.160, parachutists may exit the aircraft for the purpose of parachute display over congested areas of cities, towns or settlements or over an open-air assembly of persons whilst carrying smoke train devices, provided these are manufactured for this purpose.

SECTION 5
Aerobatic flights (ABF)

NCO.SPEC.ABF.100 Checklist

The checklist for ABF shall contain:

- (a) normal, abnormal and emergency procedures;
- (b) relevant performance data;
- (c) required equipment;
- (d) any limitations; and
- (e) responsibilities and duties of the pilot-in-command, and, if applicable, crew members and task specialists.

NCO.SPEC.ABF.105 Documents and information

The following documents and information listed in NCO.GEN.135(a) need not be carried during aerobatic flights:

- (a) details of the filed ATS flight plan, if applicable;
- (b) current and suitable aeronautical charts for the route/area of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted; and
- (c) procedures and visual signals information for use by intercepting and intercepted aircraft.

NCO.SPEC.ABF.110 Equipment

The following equipment requirements need not be applicable to aerobatic flights:

- (a) first-aids kit as laid down in NCO.IDE.A.145 and NCO.IDE.H.145;
- (b) hand-fire extinguishers as laid down in NCO.IDE.A.160 and NCO.IDE.H.180; and
- (c) emergency locator transmitters or personal locator beacons as laid down in NCO.IDE.A.170 and NCO.IDE.H.170.