สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand

Acceptable Means of Compliance and Guidance Material to TCAR OPS Part Non - commercial air operations with other than complex motor-powered aircraft

(AMC/GM to TCAR OPS Part-NCO)

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Approved By

Air Chief Marshal

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Director General

The Civil Aviation Authority of Thailand

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INTRODUCTION AND APPLICABILITY

In this publication the word 'should' is used to indicate that the Organisation, Owner or Operator has a degree of latitude in adhering to the requirement, particularly where the nature of the operation - or proposed operation - affects their ability to achieve the necessary degree of compliance with the requirement; provided that an acceptable level of safety is achieved.

If the Organisation's/owner's/operator's response is deemed to be inadequate by the Director General, a specific requirement or restriction may be applied as a condition of the appropriate instrument to be issued under Thailand Civil Aviation Regulations. This publication includes associated means of compliance and interpretative material wherever possible and, unless specifically stated otherwise, clarification will be based on this material or other relevant the CAAT documentation.

These AMCs and GM are based on EASA Executive Director Decisions (ED) up to 2018/012/R, 2019/005/R, 2019/019/R, 2019/025/R, 2021/002/R, 2021/005/R, 2021/008/R, 2022/005/R, 2022/012/R, 2022/014/R and 2023/004/R.

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SUBPART A: GENERAL REQUIREMENTS

GM1 NCO.GEN.100(b) The competent authority

DETERMINING THE PLACE WHERE AN OPERATOR IS RESIDING

For the purpose of TCAR OPS, the concept of 'place where the operator is residing' is mainly addressed to a natural person.

The place where the operator resides is the place where the operator complies with his or her tax obligations.

Several criteria can be used to help determining a person's place of residence. These include, for example:

(a) the duration of a person's presence on the territory of the countries concerned;

(b) the person's family status and ties;

(c) the person's housing situation and how permanent it is;

(d) the place where the person pursues professional or non-profit activities;

(e) the characteristics of the person's professional activity;

(f) the State where the person resides for taxation purposes.

AMC1 NCO.GEN.104 Use of aircraft included in an AOC by an NCO operator

RESPONSIBILITIES OF THE NCO OPERATOR

The operator using the aircraft included in an AOC for operations performed in accordance with Part NCO should describe the following elements in its procedure required in NCO.GEN.104:

(a) the way in which the shifting of operational control is communicated, including how, when and to whom the information is communicated;

(b) the means to ensure that the relevant personnel are instructed on the following:

(1) to contact the organisation responsible for the management of continuing airworthiness of the aircraft of the AOC holder (CAMO or CAO) for any defect or technical malfunction which occurs before or during the operation. The information about any defect or malfunction should be transmitted to the CAMO/CAO of the AOC holder before the aircraft is used for the next flight. The same information should be confirmed by the entries in the aircraft technical log system; and

(2) to report any occurrence in accordance with the applicable rules and the internal procedures; and

(c) the way in which the operator deals with failures and defects identified before the flight.

GM1 NCO.GEN.104 Use of aircraft included in an AOC by an NCO operator

SCOPE

As per SPO.GEN.005(b), operators performing non-commercial specialised operations with other than complex motor-powered aircraft will comply with TCAR OPS Part NCO. Thus, such operators are also covered by NCO.GEN.104.

GM1 NCO.GEN.104(c) Use of aircraft included in an AOC by an NCO operator

CONTINUING AIRWORTHINESS MANAGEMENT

The management of the continuing airworthiness of the aircraft by the CAMO/CAO of the AOC holder means that the NCO operator has established a written contract with this CAMO/CAO in accordance with applicable airworthiness regulations.

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

FLIGHT PREPARATION FOR PBN OPERATIONS

(a) The pilot-in-command should ensure that RNAV 1, RNAV 2, RNP 1, RNP 2, and RNP APCH routes or procedures to be used for the intended flight, including for any alternate aerodromes, are selectable from the navigation database and are not prohibited by NOTAM.

(b) The pilot-in-command should take account of any NOTAMs or pilot-in-command briefing material that could adversely affect the aircraft system operation along its flight plan including any alternate aerodromes.

(c) When PBN relies on GNSS systems for which RAIM is required for integrity, its availability should be verified during the preflight planning. In the event of a predicted continuous loss of fault detection of more than five minutes, the flight planning should be revised to reflect the lack of full PBN capability for that period.

(d) For RNP 4 operations with only GNSS sensors, a fault detection and exclusion (FDE) check should be performed. The maximum allowable time for which FDE capability is projected to be unavailable on any one event is 25 minutes. If predictions indicate that the maximum allowable FDE outage will be exceeded, the operation should be rescheduled to a time when FDE is available.

(e) For RNAV 10 operations, the pilot-in-command should take account of the RNAV 10 time limit declared for the inertial system, if applicable, considering also the effect of weather conditions that could affect flight duration in RNAV 10 airspace. Where an extension to the time limit is permitted, the pilot-in-command will need to ensure that en route radio facilities are serviceable before departure, and to apply radio updates in accordance with any AFM/POH limitation.

AMC2 NCO.GEN.105 Pilot-in-command responsibilities and authority

DATABASE SUITABILITY

(a) The pilot-in-command should check that any navigational database required for PBN operations includes the routes and procedures required for the flight.

DATABASE CURRENCY

(b) The database validity (current AIRAC cycle) should be checked before the flight.

(c) Navigation databases should be current for the duration of the flight. If the AIRAC cycle is due to change during flight, the pilot-in-command should follow procedures established by the pilot-in-command to ensure the accuracy of navigation data, including the suitability of navigation facilities used to define the routes and procedures for the flight.

(d) An expired database may only be used if the following conditions are satisfied:

(1) the pilot-in-command has confirmed that the parts of the database which are intended to be used during the flight and any contingencies that are reasonable to expect are not changed in the current version;

(2) any NOTAMs associated with the navigational data are taken into account;

(3) maps and charts corresponding to those parts of the flight are current and have not been amended since the last cycle;

(4) any MEL limitations, where available, are observed; and

(5) the database has expired by no more than 28 days.

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

GENERAL

In accordance with the Air Navigation Act B.E 2497, and Kingdom of Thailand Civil Aviation Regulations 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.

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.

AMC1 NCO.GEN.105(a)(3) 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 restart 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 CAAT. Such reports should be submitted as soon as possible and normally within 10 days.

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;

(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.

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.

(d) Maintenance runs should not include collective increase or auto pilot engagement (risk of ground resonance).

AMC1 NCO.GEN.125 Portable electronic devices (PEDs)

ELECTRONIC FLIGHT BAGS (EFBS) — HARDWARE

(a) EFB viewable stowage

When a viewable stowage device is used, the pilot-in-command should ensure that, if the EFB moves or is separated from its stowage, or if the viewable stowage is unsecured from the aircraft (as a result of turbulence, manoeuvring, or other action), it will not jam flight controls, damage flight deck equipment, or injure any person on board.

The viewable stowage device should not be positioned in such a way that it obstructs visual or physical access to aircraft controls and/or displays, flight crew ingress or egress, or external vision. The design of the viewable stowage device should allow the user easy access to any item of the EFB system, and notably to the EFB controls and a clear view of the EFB display while in use.

(b) Cables

If cables are used to connect an EFB to an aircraft system, power source, or any other equipment:

(1) the cables should not hang loosely in a way that compromises task performance and safety; flight crew should be able to easily secure the cables out of the way during operations (e.g. by using cable tether straps); and

(2) the cables should be of sufficient length so that they do not to obstruct the use of any movable device on the flight deck.

AMC2 NCO.GEN.125 Portable electronic devices (PEDs)

ELECTRONIC FLIGHT BAGS (EFBs) — FUNCTIONS

(a) Familiarisation

The pilot-in-command should familiarise himself or herself with the use of the EFB hardware and its applications on the ground before using them in flight for the first time.

A user guide should be available for the pilot-in-command.

(b) Check before flight

Before each flight, the pilot-in-command should perform the following checks to ensure the continued safe operation of the EFB during the flight:

(1) general check of the EFB operation by switching it ON and checking that the applications they intend to use in flight are adequately operative;

(2) check of the remaining available battery power, if applicable, to ensure the availability of the EFB during the planned flight;

(3) check of the version effectivity of the EFB databases, if applicable (e.g. for charts, performance calculation and weight and balance applications); and

(4) check that an appropriate backup is available when a chart application or an application displaying aircraft checklists is used.

(c) Chart applications

The navigation charts that are depicted should contain the necessary information in an appropriate format, to perform the operation safely. Consideration should be given to the size of the display to ensure legibility.

(d) Performance calculation and weight and balance functions or applications

Prior to the first use of a performance calculation or weight and balance function or application, and following any update of the database supporting the function or the application, a check should be performed on the ground to verify that the output of the application corresponds with the data derived from the AFM (or other appropriate sources);

(e) Airport moving map display (AMMD) application

An AMMD application should not be used as a primary means of navigation for taxiing, but as a confirmation of outside visual references.

(f) Other functions

If advanced functions on non-certified devices that display information related to the aircraft position in flight, navigation, surroundings in terms of e.g. terrain or traffic, or attitude are used, the pilot in command should be aware of the potential misleading or erroneous information displayed and should only use these functions as an advisory or supplementary means.

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) 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.

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.

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.

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.

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 TCAR OPS 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 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 CAAT.

(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 TCAR OPS Part SPA, Subpart G.

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 member

should 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:

<table>
<tr><td colspan="3">DANGEROUS GOODS OCCURRENCE REPORT</td><td>DGOR No:</td></tr>
<tr><td>1. Operator:</td><td colspan="2">2. Date of Occurrence:</td><td>3. Local time of occurrence:</td></tr>
<tr><td colspan="4">4. Flight date:</td></tr>
<tr><td colspan="2">5. Departure aerodrome:</td><td colspan="2">6. Destination aerodrome:</td></tr>
<tr><td colspan="2">7. Aircraft type:</td><td colspan="2">8. Aircraft registration:</td></tr>
<tr><td colspan="2">9. Location of occurrence:</td><td colspan="2">10. Origin of the goods:</td></tr>
<tr><td colspan="4">11. Description of the occurrence, including details of injury, damage, etc. (if necessary continue on the reverse of this form):</td></tr>
<tr><td colspan="3">12. Proper shipping name (including the technical name):</td><td>13. UN/ID No (when known):</td></tr>
<tr><td>14.Class/Division (when known):</td><td>15. Subsidiary risk(s):</td><td>16. Packing group:</td><td>17. Category (Class 7 only):</td></tr>
<tr><td>18. Type of packaging:</td><td>19. Packaging specification marking:</td><td>20. No of packages:</td><td>21. Quantity (or transport index, if applicable):</td></tr>
<tr><td colspan="4">22. Name and address of passenger, etc.:</td></tr>
<tr><td colspan="4">23. Other relevant information (including suspected cause, any action taken):</td></tr>
<tr><td colspan="2">24. Name and title of person making report:</td><td colspan="2">25. Telephone No:</td></tr>
<tr><td colspan="2">26. Company</td><td colspan="2">27. Reporters ref:</td></tr>
<tr><td colspan="2">28. Address:</td><td colspan="2">29. Date:</td></tr>
<tr><td colspan="4">Description of the occurrence (continuation)</td></tr>
</table>

Notes for completion of the form:

(1) A dangerous goods accident is as defined in TCAR OPS Part DEF. For this purpose serious injury is as defined in the Air Navigation Act B.E.2497 and Kingdom of Thailand Civil Aviation Occurrence Reporting Regulation.

(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.

AMC1 NCO.GEN.140(f) Transport of dangerous goods

GENERAL

The quantities of DG carried for operational purposes should be reasonable considering the purposes for which they might be required before the aircraft is able to replenish its supplies, e.g. at its home base or, in the case of a long tour, at any aerodrome along the route where the aircraft is planned to land and where such supplies are available.

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

GENERAL

In addition to items authorised under paragraph 1;2.2.1(a) of the Technical Instructions, the articles and substances should be items such as, e.g. aircraft spare parts, components/substances needed for aircraft repair, oil (for aircraft engine/gearbox), aircraft fuel, de-icing fluid, aircraft battery, and air

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.

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 CAAT.

(b) An acceptable timescale for notifying the amended MEL to the CAAT 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.

(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 TCAR OPS 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 CAAT 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 EASA Part 21 , 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 TCAR OPS 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 CAAT 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

AMC1 NCO.OP.101(a) Altimeter check and settings

PRE-FLIGHT ALTIMETER CHECK

A serviceable altimeter indicates the elevation of the point selected, plus the height of the altimeter above this point, within a tolerance of ± 60 ft.

If the altimeter does not indicate the reference elevation or height exactly but is within the specified tolerances, no adjustment of this indication should be made at any stage of a flight. Also, any error which is within tolerance on the ground should be ignored by the pilot during flight.

If no altimeter setting is available at the aerodrome or operating site of departure, the altimeter should be set using the elevation of the aerodrome or operating site, and the altimeter setting should be verified on first contact with an ATS unit.

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 aerodromerunway/final approach and take-off area (FATO)/operating site planned to be used and aircraft characteristics and equipment. 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.

(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 an engine failure after rotation..

(2) For night operations, sufficient lighting should be in operation to illuminate the runway/final approach and take-off area (FATO) and any relevant obstacles.

(3) For helicopters outside of a runway environment, the minimum VIS should be 800 m, and for offshore helideck operations, the minimum VIS should be 500 m.

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

RVR OR VIS FOR INSTRUMENT APPROACH OPERATIONS — DETERMINATION OF DH/MDH FOR INSTRUMENT APPROACH OPERATIONS — AEROPLANES

(a) The RVR (or for non-instrument runways, VIS) for straight-in instrument approach operations should not be less than the greatest of the following:

(1) the minimum RVR (or for non-instrument runways, VIS) for the type of runway used according to Table 1;

(2) the minimum RVR determined according to the MDH or DH and class of lighting facility according to Table 2;

(3) the minimum RVR according to the visual and non-visual aids and on-board equipment used according to Table 3.

(b) For Category A and B aeroplanes, if the RVR determined in accordance with (a) is greater than 1 500 m, then 1 500 m should be used.

(c) The visual aids, if available, may comprise standard runway day markings, runway edge lights, threshold lights, runway end lights and approach lights as defined in Table 6.

(d) For night operations or for any operation where credit for visual aids is required, the lights should be on and serviceable except as provided for in GM5 NCO.OP.110.

Table 1 Type of runway versus minimum RVR or VIS — aeroplanes

Runway type	**Lowest DH/MDH (ft)**
Precision approach (PA) runway, category I	550
NPA runway	750
Non-Instrument runway	Visibility according to Table 1 in NCO.OP.112 (Circling minima)

Table 2 RVR versus DH/MDH

DH or MDH (ft)			**Class of lighting facility**			
			FALS	**IALS**	**BALS**	**NALS**
			RVR (m)			
200	-	210	550	750	1 000	1 200
211	-	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
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	2 400
561	-	580	1 900	2 200	2 400	2 400
581	-	600	2 000	2 300	2 400	2 400
601	-	620	2 100	2 400	2 400	2 400
621	-	640	2 200	2 400	2 400	2 400
641	-	660	2 300	2 400	2 400	2 400
661	and above		2 400	2 400	2 400	2 400

Table 3 Visual and non-visual aids and/or on-board equipment versus minimum RVR — aeroplanes

Type of approach	Facilities Lowest	RVR (m)
PA and APV procedure	RTZL and RCLL	[no limitation]
	without RTZL and RCLL but using HUDLS or equivalent system; coupled autopilot or flight director to DH	[no limitation]
	No RTZL and RCLL, not using HUDLS or equivalent system or autopilot to DH.	750
NPA procedure	Final approach track offset $<15^0$ for category A and B aeroplanes or $<5^0$ Category C and D aeroplanes	750
	Final approach track offset $\geq 15^0$ for category A or B aeroplanes	1 000
	Final approach track offset $\geq 5^0$ for category C or D aeroplanes	1 200

DETERMINATION OF RVR FOR INSTRUMENT APPROACH OPERATIONS — HELICOPTERS

(e) For IFR operations, the RVR should not be less than the greatest of the following:

(1) the minimum RVR for the type of runway/FATO used according to Table 4; or

(2) the minimum RVR determined according to the MDH or DH and class of lighting facility according to Table 5;

(3) for PinS operations with instructions to ‘proceed visually’, the distance between the MAPt of the PinS and the FATO/approach light system.

(f) For PinS operations with instructions to ‘proceed VFR’, the VIS should be compatible with visual flight rules.

(g) The visual aids, if available, may comprise standard runway day markings, runway edge lights, threshold lights, runway, end lights and approach lights as defined in Table 6.

(h) For night operations or for any operation where credit for visual aids is required, the lights should be on and serviceable.

Table 4 Type of runway/FATO versus minimum RVR — helicopters

Type of runway/FATO	Minimum RVR or VIS
Precision approach (PA) runway, category I NPA runway Non-instrument runway	RVR 550 m
Instrument FATO FATO	RVR 550 m RVR/VIS 800 m

Table 5 DH/MDH versus minimum RVR — helicopters

DH/MDH (ft)	Facilities versus RVR (m)			
	FALS	IALS	BALS	NALS
200	550	600	700	1 000
201–249	550	650	750	1 000
250–299	600*	700*	800	1 000
300 and above	750*	800	900	1 000

* Minima on 2D approach operations should be no lower than 800 m.

APPROACH LIGHTING SYSTEMS — AEROPLANES AND HELICOPTERS

Table 6 Approach lighting systems

Class of lighting facility	Length, configuration and intensity of approach lights
FALS	CAT I lighting system (HIALS ≥720 m) distance coded centre line, barrette centre line
IALS	Simple approach lighting system (HIALS 420–719 m) single source, barrette
BALS	Any other approach lighting system (HIALS, MALS or ALS 210–419 m)
NALS	Any other approach lighting system (HIALS, MALS or ALS <210 m) or no approach lights

AMC3 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.

GM1 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 7 should be used.

Table 7: Aircraft categories corresponding to VAT values

Aircraft category	VAT
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

(c) Helicopters are also eligible for Category H where applicable.

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

FLIGHTS WITH VFR AND IFR SEGMENTS

Where a flight contains VFR and IFR segments, aerodrome operating minima need be established only as far as relevant to the IFR segments. Attention is drawn to NCO.OP.160 (a) and (c), according to which, the pilot-in-command shall be satisfied that the VFR segments will be conducted in conditions at or above the applicable VFR operating minima. For example, for a VFR departure changing to IFR at a transition point en-route and an IFR arrival at destination, the pilot-in-command should be satisfied that VMC will exist up to the transition point, and aerodrome operating minima should be established for the destination and any alternate destinations required.

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

MEANS TO DETERMINE THE REQUIRED RVR BASED ON DH AND LIGHTING FACILITIES

(a) The values in Table 2 are derived from the formula below:

RVR (m) = [(DH/MDH (ft) x 0.3048)/tanα] — 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. An upper RVR limit of 2 400 m has been applied to the table.

(b) The lighting system classes in Table 2 have the meaning specified in Table 6.

GM4 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

USE OF THIRD-PARTY INFORMATION

If a pilot-in-command uses information provided by a third party for aerodrome operating minima, the pilot-in-command verifies that the method for calculating minima is in accordance with this Regulation.

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

EFFECT OF TEMPORARILY FAILED OR DOWNGRADED GROUND EQUIPMENT ON LANDING MINIMA

(a) Lighting in Table 5 should be considered only if the relevant lighting is operating. For example, if components of a FALS have failed leaving only the last 250 m operating normally, the lighting facilities should be treated as BALS.

(b) Failures of standby equipment, standby power systems, middle markers and RVR assessment systems have no effect on minima.

GM1 NCO.OP.110(b)(5) Aerodrome operating minima — aeroplanes and helicopters

VISUAL AND NON-VISUAL AIDS AND INFRASTRUCTURE

'Visual and non-visual aids and infrastructure' refers to all equipment and facilities required for the procedure to be used for the intended instrument approach operation. This includes but is not limited to, lights, markings, ground or space-based radio aids, etc.

AMC1 NCO.OP.111 Aerodrome operating minima — 2D and 3D approach operations

DETERMINATION OF DH/MDH FOR INSTRUMENT APPROACH OPERATIONS AND RUNWAY

When determining the DH/MDH in accordance with the obstacle clearance hight (OCH) for the category of aircraft and the published approach procedure DH or minimum descent height (MDH), the pilot should determine whether the obstacle limitation surface is appropriate for the type of instrument approach flown and runway as this matter may have an impact on the calculation of the OCH and DH/MDH. When this information is not available (e.g. not mentioned in the AIP, etc.), then the pilot should take into account Table 8 or 9 below, as applicable, when determining the DH/MDH:

Table 8 Runway type minima — aeroplanes

Runway type	Lowest DH/MDH (ft)
PA runway, category I	200
NPA runway	250
Non-instrument runway	Circling minima as shown in Table 1 in NCC.OP.112

Table 9 Type of runway/FATO minima — helicopters

Type of runway/FATO	Lowest DH/MDH (ft)
PA runway, category I NPA runway Non-instrument runway	200
Instrument FATO FATO	200 250

Table 8 does not apply to helicopter PinS approaches with instructions to 'proceed VFR'.

GM1 NCO.OP.111 Aerodrome operating minima — 2D and 3D approach operations

APPROACH OPERATIONS — VERTICAL PATH CONTROL FOR NPA

(a) During a 3D instrument approach operation (using both lateral and vertical navigation guidance), the displayed vertical path should be followed continuously. The approach may be continued to DA/H, at which point a missed approach must be initiated if visual reference is not acquired.

(b) During a 2D instrument approach operation (using lateral navigation guidance only) flown using the continuous descent final approach (CDFA) technique, the vertical path should be approximated continuously by:

(1) choosing an appropriate vertical speed;
(2) cross-checking level against position along the approach; and
(3) adapting the vertical speed as required.

The approach may be continued to DA/H or the missed approach point (MAPt) (whichever is reached first), at which point a missed approach must be initiated if visual reference is not acquired. There is no MDH for an NPA flown using the CDFA technique. An aircraft may descend briefly below the DH on an NPA flown using the CDFA technique, in the same way as it may on a PA or APV.

(c) During a 2D instrument approach operation (using lateral navigation guidance only) flown using the step-down (non-CDFA) technique, the vertical path consists of a sequence of one or more descents to the next published level (i.e. the MDA/H or height at the next stepdown fix). The aircraft may fly level at the MDA/H until reaching the MAPt, where a missed approach must be initiated if visual reference is not acquired.

The CDFA technique has substantially improved safety performance in commercial air transport operations with complex motor-powered aircraft. In lighter, more manoeuvrable aircraft, operated by a single pilot, which may be accustomed to shorter and steeper visual approaches, there may sometimes be advantages to a step-down technique. Due consideration should be given to the choice of vertical path control at the planning stage of flight.

GM2 NCO.OP.111 Aerodrome operating minima — 2D and 3D approach operations

DH/MDH — CALCULATION OF DA/MDA

NCO.OP.111 refers to DH and MDH because the rule compares heights with other heights (system minima, minimum DH in the AFM, etc.). Usually, the DH or MDH will be converted to DA or MDA for operational use by adding the threshold elevation.

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 flight 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 established, but not below MDA/H — the aeroplane should follow the corresponding instrument approach procedure (IAP) 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 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 visual 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.

(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.

GM2 NCO.OP.112 Aerodrome operating minima — circling operations with aeroplanes

DH/MDH — CALCULATION OF DA/MDA

NCO.OP.112 refers to MDH because the rule compares heights with other heights (minimum circling height, OCH, etc.). Usually, the MDH will be converted to MDA for operational use by adding the aerodrome elevation.

AMC1 NCO.OP.115 Departure and approach procedures — aeroplanes and helicopters

ARRIVALS AND DEPARTURES UNDER IFR WHERE NO INSTRUMENT FLIGHT PROCEDURES ARE PUBLISHED

When arriving or departing under IFR to/from an aerodrome or operating site with no published instrument flight procedure, the pilot-in-command should ensure that sufficient obstacle clearance is available for safe operation. This may be achieved, for example, by climbing or descending visually when below a minimum altitude at which obstacle clearance is known to exist.

When operating IFR in uncontrolled airspace, separation from other aircraft remains the responsibility of the pilot-in-command. The pilot-in-command should also comply with any flight planning and communication requirements designated by the competent authority. Any ATC clearance required to enter controlled airspace must be obtained prior to entry

AMC1 NCO.OP.116 Performance-based navigation — aeroplanes and helicopters

PBN OPERATIONS

For operations where a navigation specification for performance-based navigation (PBN) has been prescribed and no specific approval is required in accordance with SPA.PBN.100, the pilot-in-command should:

(a) use operating procedures specifying:

(1) normal, abnormal and contingency procedures;

(2) electronic navigation database management; and

(3) relevant entries in the minimum equipment list (MEL), where applicable;

(b) ensure that he/she is appropriately trained for the intended operation.

AMC2 NCO.OP.116 Performance-based navigation — aeroplanes and helicopters

MONITORING AND VERIFICATION

(a) Preflight and general considerations

(1) At navigation system initialisation, the pilot-in-command should confirm that the navigation database is current and verify that the aircraft position, if required, has been entered correctly.

(2) The active flight plan, if applicable, should be checked by comparing the charts or other applicable documents with navigation equipment and displays. This includes confirmation of the waypoint sequence, reasonableness of track angles and distances, any altitude or speed constraints, and, where possible, which waypoints are fly-by and which are fly-over. Where relevant, the RF leg arc radii should be confirmed.

(3) The pilot-in-command should check that the navigation aids critical to the operation of the intended PBN procedure are available.

(4) The pilot-in-command should confirm the navigation aids that should be excluded from the operation, if any.

(5) An arrival, approach or departure procedure should not be used if the validity of the procedure in the navigation database has expired.

(b) Departure

(1) Prior to commencing a take-off on a PBN procedure, the pilot-in-command should verify that the area navigation system is available and operating correctly and the correct aerodrome and runway data has been loaded. A positive check should be made that the indicated aircraft position is consistent with the actual aircraft position at the start of the take-off roll (aeroplanes) or lift-off (helicopters).

(2) Where GNSS is used, the signal should be acquired before the take-off roll (aeroplanes) or lift-off (helicopters) commences.

(3) Unless automatic updating of the actual departure point is provided, the pilot-in-command should ensure initialisation on the runway or FATO either by means of a manual runway threshold or intersection update, as applicable. This is to preclude any inappropriate or inadvertent position shift after take-off.

(c) Arrival and approach

(1) The pilot-in-command should verify that the navigation system is operating correctly and the correct arrival procedure and runway (including any applicable transition) are entered and properly depicted.

(2) Any published altitude and speed constraints should be observed.

(3) The pilot-in-command should check approach procedures (including alternate aerodromes if needed) as extracted by the system (e.g. CDU flight plan page) or presented graphically on the moving map, in order to confirm the correct loading and the reasonableness of the procedure content.

(4) Prior to commencing the approach operation (before the IAF), the pilot-in-command should verify the correctness of the loaded procedure by comparison with the appropriate approach charts. This check should include:

(i) the waypoint sequence;

(ii) reasonableness of the tracks and distances of the approach legs and the accuracy of the inbound course; and

(iii) the vertical path angle, if applicable.

(d) Altimetry settings for RNP APCH operations using Baro VNAV

(1) Barometric settings

(i) The pilot-in-command should set and confirm the correct altimeter setting and check that the two altimeters provide altitude values that do not differ more than 100 ft at the most at or before the FAF.

(ii) The pilot-in-command should fly the procedure with:

(A) a current local altimeter setting source available — a remote or regional altimeter setting source should not be used; and

(B) the QNH/QFE, as appropriate, set on the aircraft's altimeters.

(2) Temperature compensation

(i) For RNP APCH operations to LNAV/VNAV minima using Baro VNAV:

(A) the pilot-in-command should not commence the approach when the aerodrome temperature is outside the promulgated aerodrome temperature limits for the procedure, unless the area navigation system is equipped with approved temperature compensation for the final approach;

(B) when the temperature is within promulgated limits, the pilot-in-command should not make compensation to the altitude at the FAF; and

(C) since only the final approach segment is protected by the promulgated aerodrome temperature limits, the pilot-in-command should consider the effect of temperature on terrain and obstacle clearance in other phases of flight.

(ii) For RNP APCH operations to LNAV minima using Baro VNAV:

(A) the pilot-in-command should consider the effect of temperature on terrain and obstacle clearance in all phases of flight, in particular on any step-down fix;

(B) if the temperature is outside promulgated limits for RNP APCH to LNAV/VNAV minima, the pilot-in-command should not use a Baro VNAV function for vertical guidance, unless the area navigation system is equipped with approved temperature compensation for the final approach.

(e) Sensor and lateral navigation accuracy selection

(1) For multi-sensor systems, the pilot-in-command should verify, during the approach, that the GNSS sensor is used for position computation.

(2) For aircraft with RNP input selection capability, the pilot-in-command should confirm that the indicated RNP value is appropriate for the PBN operation.

AMC3 NCO.OP.116 Performance-based navigation — aeroplanes and helicopters

MANAGAMENT OF THE NAVIGATION DATABASE

(a) For RNAV 1, RNAV 2, RNP 1, RNP 2, and RNP APCH, the pilot-in-command should neither insert nor modify waypoints by manual entry into a procedure (departure, arrival or approach) that has been retrieved from the database. User-defined data may be entered and used for waypoint altitude/speed constraints on a procedure where said constraints are not included in the navigation database coding.

(b) For RNP 4 operations, the pilot-in-command should not modify waypoints that have been retrieved from the database. User-defined data (e.g. for flex-track routes) may be entered and used.

(c) The lateral and vertical definition of the flight path between the FAF and the missed approach point (MAPt) retrieved from the database should not be revised by the pilot-in-command.

AMC4 NCO.OP.116 Performance-based navigation — aeroplanes and helicopters

DISPLAYS AND AUTOMATION

(a) For RNAV 1, RNP 1, and RNP APCH operations, the pilot-in-command should use a lateral deviation indicator, and where available, flight director and/or autopilot in lateral navigation mode.

(b) The appropriate displays should be selected so that the following information can be monitored:

(1) the computed desired path;

(2) aircraft position relative to the lateral path (cross-track deviation) for FTE monitoring; and

(3) aircraft position relative to the vertical path (for a 3D operation).

(c) The pilot-in-command of an aircraft with a lateral deviation indicator (e.g. CDI) should ensure that lateral deviation indicator scaling (full-scale deflection) is suitable for the navigation accuracy associated with the various segments of the procedure.

(d) The pilot-in-command should maintain procedure centrelines unless authorised to deviate by ATC or demanded by emergency conditions.

(e) Cross-track error/deviation (the difference between the area-navigation-system-computed path and the aircraft-computed position) should normally be limited to ± ½ time the RNAV/RNP value associated with the procedure. Brief deviations from this standard (e.g. overshoots or undershoots during and immediately after turns) up to a maximum of 1 time the RNAV/RNP value should be allowable.

(f) For a 3D approach operation, the pilot-in-command should use a vertical deviation indicator and, where required by AFM/POH limitations, a flight director or autopilot in vertical navigation mode.

(g) Deviations below the vertical path should not exceed 75 ft at any time, or half-scale deflection where angular deviation is indicated, and not more than 75 ft above the vertical profile, or half-scale deflection where angular deviation is indicated, at or below 1 000 ft above aerodrome level. The pilot-in-command should execute a missed approach if the vertical deviation exceeds this criterion, unless the pilot-in-command has in sight the visual references required to continue the approach.

AMC5 NCO.OP.116 Performance-based navigation — aeroplanes and helicopters

VECTORING AND POSITIONING

(a) ATC tactical interventions in the terminal area may include radar headings, 'direct to' clearances which bypass the initial legs of an approach procedure, interceptions of an initial or intermediate segments of an approach procedure or the insertion of additional waypoints loaded from the database.

(b) In complying with ATC instructions, the pilot-in-command should be aware of the implications for the navigation system.

(c) 'Direct to' clearances may be accepted to the IF provided that it is clear to the pilot-in-command that the aircraft will be established on the final approach track at least 2 NM before the FAF.

(d) 'Direct to' clearance to the FAF should not be acceptable. Modifying the procedure to intercept the final approach track prior to the FAF should be acceptable for radar-vectored arrivals or otherwise only with ATC approval.

(e) The final approach trajectory should be intercepted no later than the FAF in order for the aircraft to be correctly established on the final approach track before starting the descent (to ensure terrain and obstacle clearance).

(f) 'Direct to' clearances to a fix that immediately precede an RF leg should not be permitted.

(g) For parallel offset operations en route in RNP 4 and A-RNP, transitions to and from the offset track should maintain an intercept angle of no more than 45° unless specified otherwise by ATC.

AMC6 NCO.OP.116 Performance-based navigation — aeroplanes and helicopters

ALERTING AND ABORT

(a) Unless the pilot-in-command has sufficient visual reference to continue the approach operation to a safe landing, an RNP APCH operation should be discontinued if:

(1) navigation system failure is annunciated (e.g. warning flag);

(2) lateral or vertical deviations exceed the tolerances; and

(3) loss of the on-board monitoring and alerting system.

(b) Discontinuing the approach operation may not be necessary for a multi-sensor navigation system that includes demonstrated RNP capability without GNSS in accordance with the AFM/POH.

(c) Where vertical guidance is lost while the aircraft is still above 1 000 ft AGL, the pilot-in-command may decide to continue the approach to LNAV minima, when supported by the navigation system.

AMC7 NCO.OP.116 Performance-based navigation — aeroplanes and helicopters

CONTINGENCY PROCEDURES

(a) The pilot-in-command should make the necessary preparation to revert to a conventional arrival procedure where appropriate. The following conditions should be considered:

(1) failure of the navigation system components including navigation sensors, and a failure effecting flight technical error (e.g. failures of the flight director or autopilot);

(2) multiple system failures affecting aircraft performance;

(3) coasting on inertial sensors beyond a specified time limit; and

(4) RAIM (or equivalent) alert or loss of integrity function.

(b) In the event of loss of PBN capability, the pilot-in-command should invoke contingency procedures and navigate using an alternative means of navigation.

(c) The pilot-in-command should notify ATC of any problem with PBN capability.

(d) In the event of communication failure, the pilot-in-command should continue with the operation in accordance with published lost communication procedures.

AMC8 NCO.OP.116 Performance-based navigation — aeroplanes and helicopters

RNAV 10

(a) Operating procedures and routes should take account of the RNAV 10 time limit declared for the inertial system, if applicable, considering also the effect of weather conditions that could affect flight duration in RNAV 10 airspace.

(b) The operator may extend RNAV 10 inertial navigation time by position updating. The operator should calculate, using statistically-based typical wind scenarios for each planned route, points at which updates can be made, and the points at which further updates will not be possible.

GM1 NCO.OP.116 Performance-based navigation — aeroplanes and helicopters

DESCRIPTION

(a) For both, RNP X and RNAV X designations, the 'X' (where stated) refers to the lateral navigation accuracy (total system error) in NM, which is expected to be achieved at least 95 % of the flight time by the population of aircraft operating within the airspace, route or procedure. For RNP APCH and A-RNP, the lateral navigation accuracy depends on the segment.

(b) PBN may be required on notified routes, for notified procedures and in notified airspace.

RNAV 10

(c) For purposes of consistency with the PBN concept, this Regulation is using the designation 'RNAV 10' because this specification does not include on-board performance monitoring and alerting.

(d) However, it should be noted that many routes still use the designation 'RNP 10' instead of 'RNAV 10'. 'RNP 10' was used as designation before the publication of the fourth edition of ICAO Doc 9613 in 2013. The terms 'RNP 10' and 'RNAV 10' should be considered equivalent.

AMC1 NCO.OP.125(b) Fuel/energy and oil supply — aeroplanes and helicopters

PLANNING CRITERIA — FINAL RESERVE FUEL/ENERGY

The final reserve fuel (FRF)/energy should be no less than the required fuel/energy to fly:

(d) for aeroplanes:

(1) for 10 minutes at maximum continuous cruise power at 1 500 ft (450 m) above the destination under VFR by day, taking off and landing at the same aerodrome/landing site, and always remaining within sight of that aerodrome/landing site;

(2) for 30 minutes at holding speed at 1 500 ft (450 m) above the destination under VFR by day; and

(3) for 45 minutes at holding speed at 1 500 ft (450 m) above the destination or destination alternate aerodrome under VFR flights by night and IFR; and

(e) for helicopters:

(1) for 10 minutes at best-range speed under VFR by day, taking off and landing at the same aerodrome/landing site, and always remaining within 25 NM of that aerodrome/landing site, when needed for the purpose of specialised operations;

(2) for 20 minutes at best-range speed for other VFR flights; and

(3) for 30 minutes at holding speed at 1 500 ft (450 m) above the destination or destination alternate aerodrome under IFR.

AMC2 NCO.OP.125(b) Fuel/energy and oil supply — aeroplanes and helicopters

FINAL RESERVE FUEL/ENERGY

The quantity of the FRF/energy should be planned before flight and be an easily recalled figure against which the pilot-in-command can assess the current fuel/energy state of the aircraft.

AMC3 NCO.OP.125(b) Fuel/energy and oil supply — aeroplanes and helicopters

FINAL RESERVE FUEL/ENERGY PROTECTION

The planned FRF/energy should be protected as a reserve in normal operations. If the fuel/energy on board falls below the FRF/energy, the pilot-in-command should consider this to be an emergency. The FRF/energy should not be used as contingency fuel in normal operations.

When the FRF/energy can no longer be protected, then a fuel/energy emergency should be declared and any landing option explored, including deviating from rules, operational procedures, and methods in the interest of safety (as per point CAT.GEN.MPA.105(b)).

GM1 NCO.OP.125(b) Fuel/energy and oil supply — aeroplanes and helicopters

LIKELIHOOD OF UNEXPECTED CIRCUMSTANCES TO INCREASE WITH FLIGHT DURATION

The likelihood of unexpected circumstances arising after the aircraft is fuelled may increase with the duration of the planned flight (for example, during a long flight, a problem at the destination aerodrome or operating site is more likely to have occurred than during a short local flight).

GM2 NCO.OP.125(b) Fuel/energy and oil supply — aeroplanes and helicopters

PLANNING of FUEL/ENERGY QUANTITY — HOLDING

When planning the fuel/energy quantity, in case of holding, and if the aircraft documentation does not provide approved data for the holding regime, the pilot should derive the fuel/energy flow data from the long-range/best-range cruise data or, if this is not provided, from the lowest available cruise data in power setting tables.

AMC1 NCO.OP.130 Passenger briefing

GENERAL

(a) 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.

AMC1 NCO.OP.135(a) Flight preparation

ADEQUACY OF GROUND FACILITIES

(a) The pilot-in-command, in ascertaining the adequacy of facilities and services available at an aerodrome of intended operation, should assess the safety risk that is associated with the type of the operation in relation to the availability of rescue and fire-fighting services (RFFS).

(b) The safety risk assessment may conclude that there is no need for availability of RFFS at the aerodrome of intended landing because of the low risk that is associated with the type of aircraft and type of operation specific to NCO.

AMC1 NCO.OP.142(b)(1) Destination alternate aerodromes – instrument approach operations

SBAS-CAPABLE GNSS EQUIPMENT

GNSS system which are authorised under (E)TSO-C145 or (E)TSO-C146 or later revisions are SBAS-capable. Aircraft certified for RNP APCH to LPV minima are considered compliant.

AMC2 NCO.OP.142(b)(3) Destination alternate aerodromes – instrument approach operations

USE OF RAIM FOR SBAS

Where a receiver with RAIM is used to meet the requirement for SBAS, its availability should be predicted by a pre-flight RAIM check, in accordance with AMC1 NCO.GEN.105(c).

GM1 NCO.OP.142(b)(4) Destination alternate aerodromes – instrument approach operations

IAPs THAT DO NOT RELY ON SBAS

This instrument approach can be an RNP APCH to LNAV minima. It can also be an RNP APCH to LNAV/VNAV minima using Baro VNAV if the aircraft is equipped with a Baro VNAV function certified for APV.

This requirement is only used for planning purposes to cover the possibility of an SBAS loss; it does not prevent the pilot from flying an approach relying on SBAS if SBAS is available.

AMC1 NCO.OP.142(b)(5) Destination alternate aerodromes – instrument approach operations

APPROPRIATE CONTINGENCY ACTION

An appropriate contingency action is an alternative offered in NCO.GEN.142(b)(5) to completion of the planned flight to a safe landing, either at the planned destination or a destination alternate, using

normal procedures and using navigation equipment meeting the requirements of NCO.IDE.A/H.100, installed for redundancy or as a backup.

The contingency action should be considered before flight and take into account the information identified by flight preparation according to NCO.OP.135. It may depend on the flight and availability of navigation solutions (satellites, ground navaids, etc.) and weather conditions (IMC, VMC) along the flight.

The contingency action addresses partial loss of navigation capability, such as:

— loss of the stand-alone GNSS equipment;

— local loss of GNSS signal-in-space (e.g. local jamming at destination);

— loss of GNSS signal-in-space.

It should take into account what options remain in case of loss of GNSS signal; for instance, (non-GNSS-based) radar vectoring by ATC, non-GNSS-based navigation systems or the possibility to reach VMC. Examples of contingency actions include:

— seeking navigational assistance from ATS, using communication and surveillance systems that remain operational, to enable safe descent to VMC;

— the emergency use of navigation equipment not meeting the requirements of NCO.IDE.A/H.100 by making use of the provisions in NCO.OP.105(e);

— descent over water or very flat terrain to levels with reduced (but reasonable) obstacle clearance; and

— unusually long periods of dead reckoning.

GM1 NCO.OP.143 Destination alternate aerodromes planning minima — aeroplanes

MINIMUM SAFE IFR HEIGHT

For the purpose of NCO.OP.143, the minimum safe IFR height is the height above the aerodrome of the lowest level compatible with minimum level for IFR flight as described in ICAO Annex 2 point 5.1.2 for en-route flight at a point from which visual flight to the aerodrome could reasonably be commenced.

GM1 NCO.OP.144 Destination alternate aerodromes planning minima — helicopters

MINIMUM SAFE IFR HEIGHT

For the purpose of NCO.OP.144, the minimum safe IFR height is the height above the aerodrome of the lowest level compatible with S minimum level for IFR flight as described in ICAO Annex 2 point 5.1.2 for en-route flight at a point from which visual flight to the aerodrome could reasonably be commenced.

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:

(f) 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;

(g) personnel and passengers should be warned that refuelling will take place;

(h) passengers should be instructed to unfasten their seat belts and refrain from smoking; and

(i) if the presence of fuel vapour is detected inside the aircraft, or any other hazard arises during refuelling, fuelling should be stopped immediately.

AMC1 NCO.OP.147 Refuelling with the engine(s) running and/or rotors turning — helicopters

CHECKLIST — HELICOPTERS

(a) Before commencing a refuelling with rotors turning, the pilot-in-command should conduct a risk assessment, assessing the complexity of the activity in order to determine the hazards and associated risks inherent in the operation, and establish mitigating measures.

(b) Refuelling with rotors turning should be performed in accordance with a checklist. Based on the risk assessment, the pilot-in-command should establish a checklist appropriate to the activity and aircraft used, taking into account this AMC.

(c) The checklist should cover relevant elements of GM1 NCO.SPEC.105.

(d) The checklist that is relevant to the duties of the pilot-in-command, crew members, and task specialists should be readily accessible.

(e) The checklist should be regularly reviewed and updated, as appropriate.

GM1 NCO.OP.147 Refuelling with the engine(s) running and/or rotors turning — helicopters

PROCEDURES— HELICOPTERS

AMC1 SPO.OP.157 and GM1 SPO.OP.157 provide a generic framework for the development of standard operating procedures (SOPs) for refuelling with the rotors turning.

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.

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.

AMC1 NCO.OP.175 Take-off conditions — aeroplanes and helicopters

METEOROLOGICAL CONDITIONS FOR TAKE-OFF — AEROPLANES

(a) When the reported 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.

(b) When no reported 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.

GM1.NCO.OP.180 Simulated situations in flight

DESIGNATION OF PERSONS AS CREW MEMBERS

(a) The operator may designate any person as a crew member (including a task specialist) provided that:

(1) the role, according to the reasonable expectation of the operator, will enhance the safety of the flight or achieve an operational objective of the flight;

(2) the person, according to the reasonable expectation of the operator, is capable of fulfilling the role;

(3) the person has been briefed on the role as a crew member and informed that they are crew, not a passenger; and

(4) the person agrees to the role as a crew member.

(b) Crew members are not considered to be passengers.

(c) Crew members may be required, by specific provisions of this Regulation and other Regulations, to hold licences, ratings or other personnel certificates to fulfil certain roles such as instructor, examiner or flight engineer in certain circumstances.

GM1 NCO.OP.185 In-flight fuel management

(a) The commander should advise ATC of a minimum fuel state by declaring MINIMUM FUEL when, having committed to land at a specific landing site, the pilot calculates that any change to the existing clearance to that landing site, or other air traffic delays may result in landing with the planned final reserve fuel.

(b) The commander should declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY, when the useable fuel estimated to be made available upon landing at the nearest landing site, where a safe landing can be made is less than the required final reserve fuel.

GM1 NCO.OP.185(b)&(c) In-flight fuel/energy management

'MINIMUM FUEL' DECLARATION

(a) The pilot-in-command may consider reporting the remaining fuel/energy endurance after a 'MINIMUM FUEL' or 'MAYDAY MAYDAY MAYDAY FUEL' declaration. Note: For Part-NCO operators, the FRF/energy varies; therefore, the ATC may not be aware of the amount of the remaining fuel/energy endurance.

(b) The 'MINIMUM FUEL' declaration informs the ATC that all planned landing options have been reduced to a specific aerodrome or operating site of intended landing, and that for helicopters, no other landing site is available. It also informs the ATC that any change to the existing clearance may result in landing with less than the planned FRF/energy. This is not an emergency situation but an indication that an emergency situation is possible, should any additional delay occur. The pilot should not expect any form of priority handling as a result of a 'MINIMUM FUEL' declaration. However, the ATC should advise the flight crew of any additional expected delays, as well as coordinate with other ATC units when transferring the control of the aircraft, to ensure that the other ATC units are aware of the flight's fuel/energy state.

(c) The requirement for declaring 'MINIMUM FUEL' and 'MAYDAY MAYDAY MAYDAY FUEL' applies only to controlled flights; however, these declarations may also be made during uncontrolled flights if the pilot-in-command considers this advisable.

AMC1 NCO.OP.190(a) Use of supplemental oxygen

DETERMINATION OF SUPPLEMENTAL OXYGEN NEED

When determining the need for supplemental oxygen carriage and use, the pilot-in-command should:

(a) in the preflight phase:

(1) be aware of hypoxia conditions and associated risks;

(2) consider the following objective conditions for the intended flight:

(i) altitude;

(ii) duration of the flight; and

(iii) any other relevant operational conditions.

(3) consider individual conditions of flight crew members and passengers in relation to:

(i) altitude of the place of residence;

(ii) smoking;

(iii) experience in flights at high altitudes;

(iv) actual medical conditions and medications;

(v) age

(vi) disabilities; and

(vii) any other relevant factor that may be detected, or reported by the person; and

(4) when relevant, ensure that all flight crew members and passengers are briefed on hypoxia conditions and symptoms, as well as on the usage of supplemental oxygen equipment.

(b) during flight:

(1) monitor for early symptoms of hypoxia conditions; and

(2) if detecting early symptoms of hypoxia conditions:

(i) consider to return to a safe altitude, and

(ii) ensure that supplemental oxygen is used, if available.

GM1 NCO.OP.190 Use of supplemental oxygen

GENERAL

(a) The responsibility of the pilot-in-command for safety of all persons on board, as required by NCO.GEN.105(a)(1), includes the determination of need for supplemental oxygen use.

(b) The altitudes above which NCO.OP.190(b) requires oxygen to be available and used are applicable to those cases when the pilot-in-command cannot determine the need for supplemental oxygen. However, if the pilot-in-command is able to make this determination, he/she may elect in the interest of safety to require oxygen also for operations at or below such altitudes.

(c) The pilot-in-command should be aware that flying below altitudes mentioned in NCO.OP.190(b) does not provide absolute protection against hypoxia symptoms, should individual conditions and aptitudes be prevalent.

GM2 NCO.OP.190 Use of supplemental oxygen

DETERMINATION OF OXYGEN NEED — BEFORE FLIGHT

Detailed information and guidance on hypoxia conditions and symptoms, content of the briefing on hypoxia and assessment of individual conditions may be found in the EASA or equivalent leaflet 'Hypoxia'.

DETERMINATION OF OXYGEN NEED — IN FLIGHT

Several methods for monitoring hypoxia early symptoms may be used and some methods may be aided by personal equipment, such as finger-mounted pulse oximeters. Detailed information and guidance on entering hypoxia conditions, on hypoxia symptoms early detection, and on use of personal equipment such as finger-mounted pulse oximeters or equivalent may be found in the EASA or equivalent leaflet 'Hypoxia'.

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

LANDING DISTANCE ASSESSMENT

(a) The in-flight landing distance assessment should be based on the latest available weather report and if available, runway condition report (RCR).

(b) The assessment should be initially carried out when weather report and RCR, if available, are obtained, usually around top of descent. If the planned duration of the flight does not allow to carry out the assessment in non-critical phases of flight, the assessment should be carried out before departure.

(c) When meteorological conditions may lead to a degradation of the runway surface condition, the assessment should include consideration of how much deterioration in runway surface friction characteristics may be tolerated, so that a quick decision can be made prior to landing.

(d) Whenever the RCR is in use and the runway braking action encountered during the landing roll is not as good as reported by the aerodrome operator in the RCR, the pilot-in-command should notify the air traffic services (ATS) by means of a special air-report (AIREP) as soon as practicable.

GM1 NCO.OP.205 Approach and landing conditions — aeroplanes

RUNWAY CONDITION REPORT (RCR)

When the aerodrome reports the runway conditions by means of an RCR, the information contained therein includes a runway condition code (RWYCC). The determination of the RWYCC is based on the use of the runway condition assessment matrix (RCAM). The RCAM correlates the RWYCC with the contaminants present on the runway and the braking action.

A detailed description of the RCR format and content, the RWYCC and the RCAM may be found in Aerodrome regulations, and in the applicable rules of the AIR Further guidance may be found in the following documents:

(a) ICAO Doc 9981 'PANS Aerodromes';

(b) ICAO Doc 4444 'PANS ATM';

(c) ICAO Doc 10064 'Aeroplane Performance Manual'; and

(d) ICAO Circular 355 'Assessment, Measurement and Reporting of Runway Surface Conditions'.

AMC1 NCO.OP.206 Approach and landing conditions — helicopters

FATO SUITABILITY

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

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

VISUAL REFERENCES

(a) For a straight-in approach, 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 path indicator;

(7) the touchdown zone (TDZ) or TDZ markings;

(8) the TDZ lights;

(9) FATO/runway edge lights; or

(10) for helicopter PinS approaches, the identification beacon light and visual ground reference;

(11) for helicopter PinS approaches, the identifiable elements of the environment defined on the instrument chart; or

(12) for helicopter PinS approaches with instructions to 'proceed VFR', sufficient visual cues to determine that the conditions for VFR are met.

(b) For a circling approach, the required visual reference is the runway environment.

AMC2 NCO.OP.210 Commencement and continuation of approach — aeroplanes and helicopters

RVR MINIMA FOR CONTINUED APPROACH

(a) The controlling RVR should be the touchdown RVR.

(b) If the touchdown RVR is not reported, then the midpoint RVR should be the controlling RVR.

(c) If neither the touchdown RVR nor the midpoint RVR is reported, then NCO.OP.210(a) is not applicable.

GM1 NCO.OP.210 Commencement and continuation of approach — aeroplanes and helicopters

APPLICATION OF RVR REPORTS

(a) There is no prohibition on the commencement of an approach based on reported RVR. The restriction in NCO.OP.210 applies only if the RVR is reported and applies to the continuation of the approach past a point where the aircraft is 1 000 ft above the aerodrome elevation or into the final approach segment (FAS) as applicable.

(b) If a deterioration in the RVR is reported once the aircraft is below 1 000 ft on the FAS, as applicable, then there is no requirement for the approach to be discontinued. In this situation, the normal visual reference requirements would apply at the DA/H.

(c) Where additional RVR information is provided (e.g. midpoint and stop end), this is advisory; such information may be useful to the pilot in order to determine whether there will be sufficient visual reference to control the aircraft during roll-out and taxi.

(d) If the RVR is less than the RVR calculated in accordance with AMC3 NCO.OP.110, a go-around is likely to be necessary since visual reference may not be established at the DH, or at the MDH at a point where a stable approach to landing in the TDZ remains possible. Similarly, in the absence of an RVR report, the reported visibility may indicate that a go-around is likely. The pilot-in-command should consider available options, based on a thorough assessment of risk, such as diverting to an alternate, before commencing the approach.

SUBPART C: AIRCRAFT PERFORMANCE AND OPERATING LIMITATIONS

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 balance records have been adjusted for alterations or modifications to the aircraft. Aircraft transferred from one CAT operator to another CAT 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) 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.

SUBPART D: INSTRUMENTS, DATA AND EQUIPMENT

SECTION 1 - Aeroplanes

GM1 NCO.IDE.A.100 Instruments and equipment — general

When EUROCAE Standards are referred to in the AMCs to TCAR OPS Part NCO, equivalent standards acceptable to the CAAT may be used to establish compliance.

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 Regulation are the following:

(a) EASA Part 21 or equivalent standards acceptable to the CAAT for aeroplanes registered in the Kingdom of Thailand and

(b) Airworthiness requirements of the State of registry for aeroplanes registered outside the Kingdom of Thailand.

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 Regulation 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.

AMC1 NCO.IDE.A.105 Minimum equipment for flight

MANAGEMENT OF THE STATUS OF CERTAIN INSTRUMENTS, EQUIPMENT OR FUNCTIONS

The operator should control and retain the status of the instruments, equipment or functions required for the intended operation, that are not controlled for the purpose of continuing airworthiness management.

GM1 NCO.IDE.A.105 Minimum equipment for flight

MANAGEMENT OF THE STATUS OF CERTAIN INSTRUMENTS, EQUIPMENT OR FUNCTIONS

(a) The operator should define responsibilities and procedures to retain and control the status of instruments, equipment or functions required for the intended operation, that are not controlled for the purpose of continuing airworthiness management.

(b) Examples of such instruments, equipment or functions may be, but are not limited to, equipment related to navigation approvals as FM immunity or certain software versions.

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.

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.

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 barometric 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 2000 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.

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 EASA, the FAA standard or other equivalent standard acceptable to the CAAT.

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.

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 according to the European Technical Standard Order ETSO-C100c on Aviation Child Safety Device (ACSD) .

(2) CRDs approved by EASA through a Type Certificate or Supplemental Type Certificate;

(3) Child seats approved for use in motor vehicles on the basis of the technical standard specified in (i). The child seat must be also approved for use in aircraft on the basis of the technical standard specified in either point (ii) or point (iii): .

(i) UN Standard ECE R44-04 (or 03), or ECE R129 bearing the respective 'ECE R' label; and

(ii) German 'Qualification Procedure for Child Restraint Systems for Use in Aircraft' (TÜV/958-01/2001) bearing the label 'For Use in Aircraft'; or

(iii) Other technical standard acceptable to the CAAT. The child seat should hold a qualification sign that it can be used in aircraft.

(4) Child seats approved for use in motor vehicles and aircraft according to Canadian CMVSS 213/213.1 bearing the respective label.

(5) Child seats approved for use in motor vehicles and aircraft according to US FMVSS No 213 and bearing one or two labels displaying the following two sentences:

(i) 'THIS CHILD RESTRAINT SYSTEM CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS'; and

(ii) In red letters 'THIS RESTRAINT IS CERTIFIED FOR USE IN MOTOR VEHICLES AND AIRCRAFT';

(6) Child seats approved for use in motor vehicles and aircraft according to Australia/New Zealand's technical standard AS/NZS 1754:2013 bearing the green part on the label displaying 'For Use in Aircraft'; and

(7) CRDs manufactured and tested according to other technical standards equivalent to those listed above. The devices 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 CAAT.

(c) Location

(1) Forward facing child seats 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 child seats should only be installed on forward facing passenger seats. A child seat 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/chiid in a CRD should be located in the vicinity of a floor level exit.

(3) An infant/child in a CRD should not hinder evacuation for any passenger.

(d) Installation

(1) CRDs tested and approved for use in aircraft should only be installed on a suitable passenger seat by the method shown in the manufacturer's instructions provided with each CRD and with the type of connecting device they are approved for the installation in aircraft. CRDs designed to be installed only by means of rigid bar lower anchorages (ISOFIX or equivalent) should only be used on passenger seats equipped with such connecting devices and should not be secured by passenger seat lap belt.

(2) All safety and installation instructions should be followed carefully by the responsible adult accompanying the infant/child. Operators should prohibit the use of a CRD not installed on the passenger seat according to the manufacturer's instructions or not approved for use in aircraft.

(3) If a forward facing child seat with a rigid backrest is to be fastened by a seat 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 child seat 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 child seat 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

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

(1) A seat belt with a diagonal shoulder strap;

(2) A restraint system having a seat belt and two shoulder straps that may be used independently;

(3) A restraint system having a seat belt, two shoulder straps and additional straps that may be used independently.

(b) The use of the upper torso restraint independently from the use of the seat belt is intended as an option for the comfort of the occupant of the seat in those phases of flight where only the seat belt is required to be fastened. A restraint system including a seat belt and an upper torso restraint that both remain permanently fastened is also acceptable.

SEAT BELT

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

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 supplemented 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 sizess, including a triangular bandage),

(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,

(8) disposable resuscitation aid, and

(9) surgical masks.

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

MAINTENANCE OF FIRST-AID KIT

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

(b) inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use;

(c) replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant; and

(d) replenished after use in-flight at the first opportunity where replacement items are available.

GM1 NCO.IDE.A.145 First-aid kit

LOCATION

The location of the first-aid kit in the cabin is normally indicated using internationally recognisable signs.

GM2 NCO.IDE.A.145 First-aid kit

CONTENT OF FIRST-AID KITS

The operator may supplement first-aid kits according to the characteristics of the operation based on a risk assessment. The assessment does not require an approval by the CAAT.

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 CAAT 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.

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.).

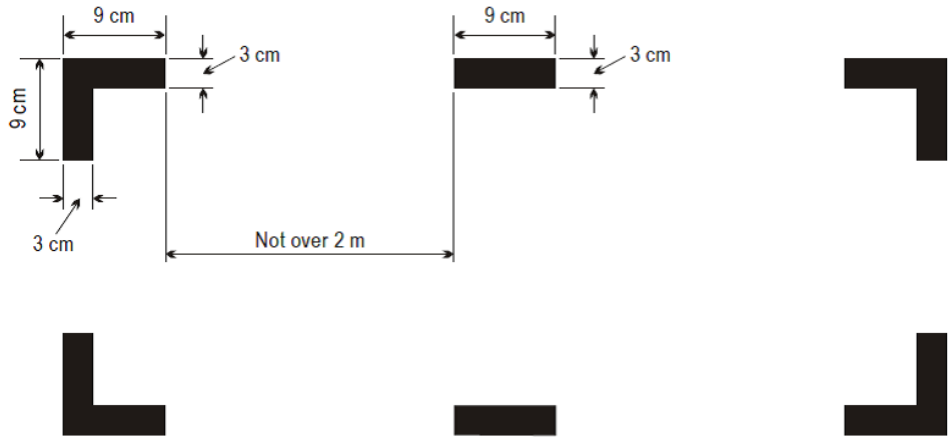
(b) The amount of oxygen should be determined on the basis of cabin pressure altitude and flight duration.

AMC2 NCO.IDE.A.155 Supplemental oxygen supply – non-pressurised aeroplanes

OXYGEN SUPPLY

The need for oxygen supply, when required by NCO.OP.190, may be met either by means of installed equipment or portable equipment.

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.

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 (e.g. 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 (e.g. 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 ELTs 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, deployed and activated by an impact, and, in some cases, also by water sensors. This type of ELT should float in water and is intended to aid SAR teams in locating the crash site. The ELT(AD) may be either a stand-alone beacon or an inseparable part of a deployable recorder.

(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. A water-activated ELT(S) is not an ELT(AP).

(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 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.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

GM1 CAT.IDE.A.280 contains explanations of terms used in point NCO.IDE.A.170 and in the related AMC.

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 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 Regulations 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.

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 CAAT 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.

GM1.NCO.IDE.A.190 Radio communication equipment

Information on the performance-based communication and surveillance (PBCS) concept and guidance material on its implementation are contained in the Performance-based Communication and Surveillance (PBCS) Manual (ICAO Document 9869)

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).

GM1 NCO.IDE.A.195 Navigation equipment

AIRCRAFT ELIGIBILITY FOR PBN SPECIFICATION NOT REQUIRING SPECIFIC APPROVAL

(a) The performance of the aircraft is usually stated in the AFM/POH.

(b) Where such a reference cannot be found in the AFM/POH, other information provided by the aircraft manufacturer as TC holder, the STC holder or the design organisation having a privilege to approve minor changes may be considered.

(c) The following documents are considered acceptable sources of information:

(1) AFM/POH, supplements thereto, and documents directly referenced in the AFM/POH;

(2) FCOM or similar document;

(3) Service Bulletin or Service Letter issued by the TC holder or STC holder;

(4) approved design data or data issued in support of a design change approval;

(5) any other formal document issued by the TC or STC holders stating compliance with PBN specifications, AMC, Advisory Circulars (AC) or similar documents issued by the State of Design; and

(6) written evidence obtained from the State of Design.

(d) Equipment qualification data, in itself, is not sufficient to assess the PBN capabilities of the aircraft, since the latter depend on installation and integration.

(e) As some PBN equipment and installations may have been certified prior to the publication of the PBN Manual and the adoption of its terminology for the navigation specifications, it is not always possible to find a clear statement of aircraft PBN capability in the AFM/POH. However, aircraft eligibility for certain PBN specifications can rely on the aircraft performance certified for PBN procedures and routes prior to the publication of the PBN Manual.

(f) Below, various references are listed which may be found in the AFM/POH or other acceptable documents (see listing above) in order to consider the aircraft's eligibility for a specific PBN specification if the specific term is not used.

(g) RNAV 5

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNAV 5 operations.

(i) B-RNAV;

(ii) RNAV 1;

(iii) RNP APCH;

(iv) RNP 4;

(v) A-RNP;

(vi) AMC 20-4;

(vii) JAA TEMPORARY GUIDANCE MATERIAL, LEAFLET NO. 2 (TGL 2);

(viii) JAA AMJ 20X2;

(ix) FAA AC 20-130A for en route operations;

(x) FAA AC 20-138 for en route operations; and

(xi) FAA AC 90-96.

(h) RNAV 1/RNAV 2

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNAV 1/RNAV 2 operations.

(i) RNAV 1;

(ii) PRNAV;

(iii) US RNAV type A;

(iv) FAA AC 20-138 for the appropriate navigation specification;

(v) FAA AC 90-100A;

(vi) JAA TEMPORARY GUIDANCE MATERIAL, LEAFLET NO. 10 Rev1 (TGL 10); and

(vii) FAA AC 90-100.

(2) However, if position determination is exclusively computed based on VOR-DME, the aircraft is not eligible for RNAV 1/RNAV 2 operations.

(i) RNP 1/RNP 2 continental

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP 1/RNP 2 continental operations.

(i) A-RNP;

(ii) FAA AC 20-138 for the appropriate navigation specification; and

(iii) FAA AC 90-105.

(2) Alternatively, if a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above and position determination is primarily based on GNSS, the aircraft is eligible for RNP 1/RNP 2 continental operations. However, in these cases, loss of GNSS implies loss of RNP 1/RNP 2 capability.

(i) JAA TEMPORARY GUIDANCE MATERIAL, LEAFLET NO. 10 (TGL 10) (any revision); and

(ii) FAA AC 90-100.

(j) RNP APCH — LNAV minima

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP APCH — LNAV operations.

(i) A-RNP;

(ii) AMC 20-27;

(iii) AMC 20-28;

(iv) FAA AC 20-138 for the appropriate navigation specification; and

(v) FAA AC 90-105 for the appropriate navigation specification.

(2) Alternatively, if a statement of compliance with RNP 0.3 GNSS approaches in accordance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP APCH — LNAV operations. Any limitation such as 'within the US National Airspace' may be ignored since RNP APCH procedures are assumed to meet the same ICAO criteria around the world.

(i) JAA TEMPORARY GUIDANCE MATERIAL, LEAFLET NO. 3 (TGL 3);

(ii) AMC 20-4;

(iii) FAA AC 20-130A; and

(iv) FAA AC 20-138.

(k) RNP APCH — LNAV/VNAV minima

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP APCH — LNAV/VNAV operations.

(i) A-RNP;

(ii) AMC 20-27 with Baro VNAV;

(iii) AMC 20-28;

(iv) FAA AC 20-138; and

(v) FAA AC 90-105 for the appropriate navigation specification.

(2) Alternatively, if a statement of compliance with FAA AC 20-129 is found in the acceptable documentation as listed above, and the aircraft complies with the requirements and limitations of EASA SIB 2014-04[1], the aircraft is eligible for RNP APCH — LNAV/VNAV operations. Any limitation such as 'within the US National Airspace' may be ignored since RNP APCH procedures are assumed to meet the same ICAO criteria around the world.

(l) RNP APCH — LPV minima

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP APCH — LPV operations.

(i) AMC 20-28;

(ii) FAA AC 20-138 for the appropriate navigation specification; and

(iii) FAA AC 90-107.

(2) For aircraft that have a TAWS Class A installed and do not provide Mode-5 protection on an LPV approach, the DH is limited to 250 ft.

[1] http://ad.easa.europa.eu/ad/2014-04

(m) RNAV 10

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNAV 10 operations.

(i) RNP 10;

(ii) FAA AC 20-138 for the appropriate navigation specification;

(iii) AMC 20-12;

(iv) FAA Order 8400.12 (or later revision); and

(v) FAA AC 90-105.

(n) RNP 4

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP 4 operations.

(i) FAA AC 20-138B or later, for the appropriate navigation specification;

(ii) FAA Order 8400.33; and

(iii) FAA AC 90-105 for the appropriate navigation specification.

(o) RNP 2 oceanic

(1) If a statement of compliance with FAA AC 90-105 for the appropriate navigation specification is found in the acceptable documentation as listed above, the aircraft is eligible for RNP 2 oceanic operations.

(2) If the aircraft has been assessed eligible for RNP 4, the aircraft is eligible for RNP 2 oceanic.

(p) Special features

(1) RF in terminal operations (used in RNP 1 and in the initial segment of the RNP APCH)

(i) If a statement of demonstrated capability to perform an RF leg, certified in accordance with any of the following specifications or standards, is found in the acceptable documentation as listed above, the aircraft is eligible for RF in terminal operations.

(A) AMC 20-26; and

(B) FAA AC 20-138B or later.

(ii) If there is a reference to RF and a reference to compliance with AC 90-105, then the aircraft is eligible for such operations.

(q) Other considerations

(1) In all cases, the limitations in the AFM/POH need to be checked, in particular the use of AP or FD which can be required to reduce the FTE primarily for RNP APCH, RNAV 1, and RNP 1.

(2) Any limitation such as ‘within the US National Airspace’ may be ignored since RNP APCH procedures are assumed to meet the same ICAO criteria around the world.

GM2 NCO.IDE.A.195 Navigation equipment

GENERAL

(a) The PBN specifications for which the aircraft complies with the relevant airworthiness criteria are set out in the AFM/POH, together with any limitations to be observed.

(b) Because functional and performance requirements are defined for each navigation specification, an aircraft approved for an RNP specification is not automatically approved for all RNAV specifications. Similarly, an aircraft approved for an RNP or RNAV specification having a stringent accuracy requirement (e.g. RNP 0.3 specification) is not automatically approved for a navigation specification having a less stringent accuracy requirement (e.g. RNP 4).

RNP 4

(c) For RNP 4, at least two LRNSs, capable of navigating to RNP 4, and listed in the AFM/POH, may be operational at the entry point of the RNP 4 airspace. If an item of equipment required for RNP 4 operations is unserviceable, then the pilot-in-command may consider an alternate route or diversion for repairs. For multi-sensor systems, the AFM/POH may permit entry if one GNSS sensor is lost after departure, provided one GNSS and one inertial sensor remain available.

AMC1 NCO.IDE.A.195(a) Navigation equipment

NAVIGATION EQUIPMENT — RNAV SUBSTITUTION

An RNAV system may be used to substitute for conventional navigation aids and radio equipment, without monitoring of the raw data from conventional navigation aids, under the following conditions:

SCOPE OF RNAV SUBSTITUTION

(a) RNAV substitution may be used in all the phases of flight except:

(1) to provide lateral guidance in the FAS of an IAP; and

(2) to substitute for DME, if a DME transceiver is either not installed on the aircraft or found to be unserviceable before flight.

SUITABILITY OF THE RNAV SYSTEM FOR RNAV SUBSTITUTION

(b) The RNAV system should meet:

(1) at least the requirements of (E)TSO-C129/-C196/-C145/-C146 (or later equivalent standards); and

(2) the requirements of NCO.OP.116(a) for RNAV 1, RNP 1 or RNP APCH as regards its installation in the aircraft.

OPERATING PROCEDURE

(c) The pilot-in-command is responsible for: (1) ensuring that any procedure and waypoints used are retrieved from a navigation database which meets the requirements of NCO.IDE.A.205; (2) verifying waypoint sequence, reasonableness of track angles, and distances of any overlay procedure used; (3) applying pre-flight procedures associated with GNSS use (e.g. RAIM check if applicable); and (4) complying with any limitation on RNAV substitution in the AFM.

PILOT COMPETENCE

(d) The pilot-in-command should be aware of the limitations of RNAV substitution. AIRSPACE LIMITATIONS

(e) RNAV substitution should not be applied on any procedure where RNAV substitution has been indicated as 'not authorised' by an AIP entry or a notice to airmen (NOTAM).

CONTINGENCY PLANNING

(f) Nothing in this AMC relieves the pilot-in-command from compliance with NCO.IDE.A.195(b) which requires 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 according to the flight plan, or an appropriate contingency action, to be completed safely.

GM1 NCO.IDE.A.195(a) Navigation equipment

NAVIGATION EQUIPMENT — SCOPE OF RNAV SUBSTITUTION

(a) Applications of RNAV substitution include use to:

(1) determine aircraft position relative to or distance from a VOR, marker, DME fix or a named fix defined by a VOR radial or NDB bearing;

(2) navigate to or from a VOR, or NDB, except as lateral guidance in the FAS of an IAP;

(3) hold over a VOR, NDB, or DME fix;

(4) fly an arc based upon DME;

(5) fly an overlay of a conventional departure, arrival, approach or route except as lateral guidance in the FAS of an IAP.

(b) RNAV substitution for ADF, marker and VOR may be used where airborne and/or ground-based equipment is not available.

(c) RNAV substitution for DME may be used where the ground-based DME transponder is unserviceable or the airborne DME transceiver is found to be unserviceable in flight. Caution must be exercised by the pilot-in-command when calculating and using GNSS distances to the active waypoint as reference points are often different.

GM2 NCO.IDE.A.195(a) Navigation equipment

NAVIGATION EQUIPMENT — SUITABILITY OF THE RNAV SYSTEM FOR RNAV SUBSTITUTION

GNSS (E)TSOs are referenced in AMC1 NCO.IDE.A.195(a) since most of the aircraft conducting NCO are equipped with an RNAV stand-alone system which exclusively bases its positioning on GNSS.

GM3 NCO.IDE.A.195(a) Navigation equipment

NAVIGATION EQUIPMENT — RNAV SUBSTITUTION — OPERATING PROCEDURE

Although RNAV substitution may not be used for lateral guidance in the FAS, this does not preclude the use of the RNAV system to fly the FAS, provided that raw data from the associated conventional navigation aids is monitored.

AMC1 NCO.IDE.A.195(b) Navigation equipment

APPROPRIATE CONTINGENCY ACTION

An appropriate contingency action is an alternative offered in NCO.IDE.A.195(b) to completion of the planned flight to a safe landing, either at the planned destination or a destination alternate, using normal procedures and using navigation equipment meeting the requirements of NCO.IDE.A.100, installed for redundancy or as a backup.

The contingency action should be considered before flight and take into account the information identified by flight preparation according to NCO.OP.135. It may depend on the flight and availability of navigation solutions (satellites, ground navaids, etc.) and weather conditions (IMC, VMC) along the flight.

The contingency action addresses partial loss of navigation capability. An appropriate contingency action to meet the requirements of NCO.IDE.A.195(b) does not rely on the performance of any function of the item of equipment whose potential failure is being considered. For example, in considering the failure of a VOR/LOC/DME receiver, none of the functions of that receiver should be relied upon in the contingency action.

Examples of contingency actions include:

— seeking navigational assistance from ATS, using communication, navigation and surveillance systems that remain operational, to enable a safe instrument approach or a safe descent to VMC;

— unusually long periods of dead reckoning.

A contingency action is required such that the failure of one item of navigation equipment has a reasonable likelihood of a safe outcome to the flight, consistent with other risks to which the operation is exposed.

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.

AMC1 NCO.IDE.A.205 Management of aeronautical databases

AERONAUTICAL DATABASES

When the operator of an aircraft uses an aeronautical database that supports an airborne navigation application as a primary means of navigation used to meet the airspace usage requirements, the database provider should be a Type 2 DAT provider certified in accordance with the relevant Kingdom of Thailand Civil Aviation Regulation for providers of air traffic management/air navigation services and other air traffic management functions or equivalent.

GM1 NCO.IDE.A.205 Management of aeronautical databases

AERONAUTICAL DATABASE APPLICATIONS

The certification of a Type 2 DAT provider in accordance with the relevant Kingdom of Thailand Civil Aviation Regulation for providers of air traffic management/air navigation services and other air traffic management functions ensures data integrity and compatibility with the certified aircraft application/equipment.

GM2 NCO.IDE.A.205 Management of aeronautical databases

TIMELY DISTRIBUTION

The operator should distribute current and unaltered aeronautical databases to all aircraft requiring them in accordance with the validity period of the databases or in accordance with an established procedure if no validity period is defined.

GM3 NCO.IDE.A.205 Management of aeronautical databases

STANDARDS FOR AERONAUTICAL DATABASES AND DAT PROVIDERS

(a) A 'Type 2 DAT provider' is an organisation as defined in the relevant Kingdom of Thailand Civil Aviation Regulation for providers of air traffic management/air navigation services and other air traffic management functions.

GM1 NCO.IDE.A.210 Surveillance Equipment

Information on surveillance equipment is contained in the Aeronautical Surveillance Manual (ICAO Document 9924)

Information on RSP specifications for performance-based surveillance is contained in the Performance-based Communication and Surveillance (PBCS) (ICAO Document 9869)

SECTION 2 - Helicopters

GM1 NCO.IDE.H.100 Instruments and equipment — general

When EUROCAE Standards are referred to in the AMCs to TCAR OPS Part NCO, equivalent standards acceptable to the CAAT may be used to establish compliance.

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 Regulation are the following:

(a) EASA Part 21 or any equivalent standard acceptable to the CAAT for helicopters registered in the Kingdom of Thailand; and

(b) Airworthiness requirements of the State of registry for helicopters registered outside the Kingdom of Thailand.

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 Regulation 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.

AMC1 NCO.IDE.H.105 Minimum equipment for flight

MANAGEMENT OF THE STATUS OF CERTAIN INSTRUMENTS, EQUIPMENT OR FUNCTIONS

The operator should control and retain the status of the instruments, equipment or functions required for the intended operation, that are not controlled for the purpose of continuing airworthiness management.

GM1 NCO.IDE.H.105 Minimum equipment for flight

MANAGEMENT OF THE STATUS OF CERTAIN INSTRUMENTS, EQUIPMENT OR FUNCTIONS

(a) The operator should define responsibilities and procedures to retain and control the status of instruments, equipment or functions required for the intended operation, that are not controlled for the purpose of continuing airworthiness management.

(b) Examples of such instruments, equipment or functions may be, but are not limited to, equipment related to navigation approvals as FM immunity or certain software versions.

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.

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.

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 2000 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.

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.

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 according to the European Technical Standard Order ETSO-C100c on Aviation Child Safety Device (ACSD).

(2) CRDs approved by EASA through a Type Certificate or Supplemental Type Certificate;

(3) Child seats approved for use in motor vehicles on the basis of the technical standard specified in (i). The child seat must be also approved for use in aircraft on the basis of the technical standard specified in either point (ii) or point (iii):

(i) UN Standard ECE R44-04 (or 03), or ECE R129 bearing the respective 'ECE R' label; and

(ii) German 'Qualification Procedure for Child Restraint Systems for Use in Aircraft' (TÜV Doc.: TÜV/958-01/2001) bearing the label 'For Use in Aircraft'; or

(iii) Other technical standard acceptable to the CAAT. The child seat should hold a qualification sign that it can be used in aircraft.

(4) Child seats approved for use in motor vehicles and aircraft according to Canadian CMVSS 213/213.1 bearing the respective label;

(5) Child seats approved for use in motor vehicles and aircraft according to US FMVSS No 213 and bearing one or two labels displaying the following two sentences:

(i) 'THIS CHILD RESTRAINT SYSTEM CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS'; and

(ii) In red letters 'THIS RESTRAINT IS CERTIFIED FOR USE IN MOTOR VEHICLES AND AIRCRAFT';

(6) Child seats approved for use in motor vehicles and aircraft according to Australia/New Zealand's technical standard AS/NZS 1754:2013 bearing the green part on the label displaying 'For Use in Aircraft'; and

(7) CRDs manufactured and tested according to other technical 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 CAAT.

(c) Location

(1) Forward facing child seats 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 child seats should only be installed on forward facing passenger seats. A child seat 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/child in a CRD should be located in the vicinity of a floor level exit.

(3) An infant/child in a CRD should not hinder evacuation for any passenger.

(d) Installation

(1) CRDs tested and approved for use in aircraft should only be installed on a suitable passenger seat by the method shown in the manufacturer's instructions provided with each CRD and with the type of connecting device they are approved for the installation in aircraft. CRDs designed to be installed only by means of rigid bar lower anchorages (ISOFIX or equivalent) should only be used on passenger seats equipped with such connecting devices and should not be secured by passenger seat lap belt.

(2) All safety and installation instructions should be followed carefully by the responsible person accompanying the infant/child. Operators should prohibit the use of a CRD not installed on the passenger seat according to the manufacturer's instructions or not approved for use in aircraft.

(3) If a forward facing child seat with a rigid backrest is to be fastened by a seat 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 child seat 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 child seat 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).

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 supplemented 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, including a triangular bandage),

(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,

(8) disposable resuscitation aid, and

(9) surgical masks.

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.

GM1 NCO.IDE.H.145 First-aid kit

LOCATION AND USE

The location of the first-aid kit is normally indicated using internationally recognisable signs. The FAK 'should be readily accessible for use' in helicopter operations should be understood as the first-aid kit being either accessible in flight or immediately after landing. In some operations, it is not practicable to use the first-aid kit during flight. Therefore, the first-aid kit can be carried in the cargo compartment, where it will be easily accessible for use as soon as the aircraft has landed, when the following conditions are met:

(a) precautionary landing sites are available;

(b) the lack of cabin space is such that movement or use of the first-aid kit is impaired; and

(c) the installation of the first-aid kit in the cabin is not practicable.

GM2 NCO.IDE.H.145 First-aid kit

CONTENT OF FIRST-AID KITS

The operator may supplement first-aid kits according to the characteristics of the operation based on a risk assessment. The assessment does not require an approval by the CAAT.

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.

AMC2 NCO.IDE.H.155 Supplemental oxygen supply – non-pressurised helicopters

OXYGEN SUPPLY

The need for oxygen supply, when required by NCO.OP.190, may be met either by means of installed equipment or portable equipment.

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.

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 (e.g. 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 (e.g 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 ELTs 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, deployed and activated by an impact, and, in some cases, also by water sensorsThis type of ELT should float in water and is intended to aid SAR teams in locating the crash site. The ELT(AD) may be either a stand-alone beacon or an inseparable part of a deployable recorder.

(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. A water-activated ELT(S) is not an ELT(AP).

(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

GM1 CAT.IDE.H.280 contains explanations of terms used in point NCO.IDE.H.170 and in the related AMC.

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 Regulations 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.

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 CAAT 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.

AMC1 NCO.IDE.H.185 All helicopters on flights over water — ditching

The considerations of AMC1 SPA.HOFO.165(d) should apply in respect of emergency flotation equipment.

GM1 NCO.IDE.H.185 All helicopters on flights over water — ditching

Sea state should be an integral part of ditching information

GM1.NCO.IDE.H.190 Surveillance Equipment

Information on the performance-based communication and surveillance (PBCS) concept and guidance material on its implementation are contained in the Performance-based Communication and Surveillance (PBCS) Manual (ICAO Document 9869)

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

The applicable airspace requirements would be those that apply in the State of operation, for example for helicopters being operated under European air traffic control, the applicable airspace requirements would include the Single European Sky legislation.

GM2 NCO.IDE.H.195 Navigation equipment

AIRCRAFT ELIGIBILITY FOR PBN SPECIFICATION NOT REQUIRING SPECIFIC APPROVAL

(a) The performance of the aircraft is usually stated in the AFM/POH.

(b) Where such a reference cannot be found in the AFM/POH, other information provided by the aircraft manufacturer as TC holder, the STC holder or the design organisation having a privilege to approve minor changes may be considered.

(c) The following documents are considered acceptable sources of information:

(1) AFM/POH, supplements thereto, and documents directly referenced in the AFM/POH;

(2) FCOM or similar document;

(3) Service Bulletin or Service Letter issued by the TC holder or STC holder;

(4) approved design data or data issued in support of a design change approval;

(5) any other formal document issued by the TC or STC holders stating compliance with PBN specifications, AMC, Advisory Circulars (AC) or similar documents issued by the State of Design; and

(6) written evidence obtained from the State of Design.

(d) Equipment qualification data, in itself, is not sufficient to assess the PBN capabilities of the aircraft, since the latter depend on installation and integration.

(e) As some PBN equipment and installations may have been certified prior to the publication of the PBN Manual and the adoption of its terminology for the navigation specifications, it is not always possible to find a clear statement of aircraft PBN capability in the AFM/POH. However, aircraft eligibility for certain PBN specifications can rely on the aircraft performance certified for PBN procedures and routes prior to the publication of the PBN Manual.

(f) Below, various references are listed which may be found in the AFM/POH or other acceptable documents (see listing above) in order to consider the aircraft's eligibility for a specific PBN specification if the specific term is not used.

(g) RNAV 5

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNAV 5 operations.

(i) B-RNAV;

(ii) RNAV 1;

(iii) RNP APCH;

(iv) RNP 4;

(v) A-RNP;

(vi) AMC 20-4;

(vii) JAA TEMPORARY GUIDANCE MATERIAL, LEAFLET NO. 2 (TGL 2)

(viii) JAA AMJ 20X2;

(ix) FAA AC 20-130A for en route operations;

(x) FAA AC 20-138 for en route operations; and

(xi) FAA AC 90-96.

(h) RNAV 1/RNAV 2

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNAV 1/RNAV 2 operations.

(i) RNAV 1;

(ii) PRNAV;

(iii) US RNAV type A;

(iv) FAA AC 20-138 for the appropriate navigation specification;

(v) FAA AC 90-100A;

(vi) JAA TEMPORARY GUIDANCE MATERIAL, LEAFLET NO. 10 Rev1 (TGL 10); and

(vii) FAA AC 90-100.

(2) However, if position determination is exclusively computed based on VOR-DME, the aircraft is not eligible for RNAV 1/RNAV 2 operations.

(i) RNP 1/RNP 2 continental

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP 1/RNP 2 continental operations.

(i) A-RNP;

(ii) FAA AC 20-138 for the appropriate navigation specification; and

(iii) FAA AC 90-105.

(2) Alternatively, if a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above and position determination is primarily based on GNSS, the aircraft is eligible for RNP 1/RNP 2 continental operations. However, in these cases, loss of GNSS implies loss of RNP 1/RNP 2 capability.

(i) JAA TEMPORARY GUIDANCE MATERIAL, LEAFLET NO. 10 (TGL 10) (any revision); and

(ii) FAA AC 90-100.

(j) RNP APCH — LNAV minima

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP APCH — LNAV operations.

(i) A-RNP;

(ii) AMC 20-27;

(iii) AMC 20-28;

(iv) FAA AC 20-138 for the appropriate navigation specification; and

(v) FAA AC 90-105 for the appropriate navigation specification.

(2) Alternatively, if a statement of compliance with RNP 0.3 GNSS approaches in accordance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP APCH — LNAV operations. Any limitation such as 'within the US National Airspace' may be ignored since RNP APCH procedures are assumed to meet the same ICAO criteria around the world.

(i) JAA TEMPORARY GUIDANCE MATERIAL, LEAFLET NO. 3 (TGL 3);

(ii) AMC 20-4;

(iii) FAA AC 20-130A; and

(iv) FAA AC 20-138.

(k) RNP APCH — LNAV/VNAV minima

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP APCH — LNAV/VNAV operations.

(i) A-RNP;

(ii) AMC 20-27 with Baro VNAV;

(iii) AMC 20-28;

(iv) FAA AC 20-138; and

(v) FAA AC 90-105 for the appropriate navigation specification.

(2) Alternatively, if a statement of compliance with FAA AC 20-129 is found in the acceptable documentation as listed above, and the aircraft complies with the requirements and limitations of EASA SIB 2014-04[2] 'or equivalent standard acceptable to the CAAT' the aircraft is eligible for RNP APCH — LNAV/VNAV operations. Any limitation such as 'within the US National Airspace' may be ignored since RNP APCH procedures are assumed to meet the same ICAO criteria around the world.

(l) RNP APCH — LPV minima

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP APCH — LPV operations.

(i) AMC 20-28;

(ii) FAA AC 20-138 for the appropriate navigation specification; and

(iii) FAA AC 90-107.

(2) For aircraft that have a TAWS Class A installed and do not provide Mode-5 protection on an LPV approach, the DH is limited to 250 ft.

(m) RNAV 10

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNAV 10 operations.

(i) RNP 10;

(ii) FAA AC 20-138 for the appropriate navigation specification;

(iii) AMC 20-12;

(iv) FAA Order 8400.12 (or later revision); and

(v) FAA AC 90-105.

(n) RNP 4

(1) If a statement of compliance with any of the following specifications or standards is found in the acceptable documentation as listed above, the aircraft is eligible for RNP 4 operations.

(i) FAA AC 20-138B or later, for the appropriate navigation specification;

(ii) FAA Order 8400.33; and

(iii) FAA AC 90-105 for the appropriate navigation specification.

(o) RNP 2 oceanic

(1) If a statement of compliance with FAA AC 90-105 for the appropriate navigation specification is found in the acceptable documentation as listed above, the aircraft is eligible for RNP 2 oceanic operations.

(2) If the aircraft has been assessed eligible for RNP 4, the aircraft is eligible for RNP 2 oceanic.

[2] http://ad.easa.europa.eu/ad/2014-04

(p) Special features

(1) RF in terminal operations (used in RNP 1 and in the initial segment of the RNP APCH)

(i) If a statement of demonstrated capability to perform an RF leg, certified in accordance with any of the following specifications or standards, is found in the acceptable documentation as listed above, the aircraft is eligible for RF in terminal operations:

(A) AMC 20-26; and

(B) FAA AC 20-138B or later.

(ii) If there is a reference to RF and a reference to compliance with AC 90-105, then the aircraft is eligible for such operations.

(q) Other considerations

(1) In all cases, the limitations in the AFM/POH need to be checked, in particular the use of AP or FD which can be required to reduce the FTE primarily for RNP APCH, RNAV 1, and RNP 1.

(2) Any limitation such as 'within the US National Airspace' may be ignored since RNP APCH procedures are assumed to meet the same ICAO criteria around the world.

GM3 NCO.IDE.H.195 Navigation equipment

GENERAL

(a) The PBN specifications for which the aircraft complies with the relevant airworthiness criteria are set out in the AFM/POH, together with any limitations to be observed.

(b) Because functional and performance requirements are defined for each navigation specification, an aircraft approved for an RNP specification is not automatically approved for all RNAV specifications. Similarly, an aircraft approved for an RNP or RNAV specification having a stringent accuracy requirement (e.g. RNP 0.3 specification) is not automatically approved for a navigation specification having a less stringent accuracy requirement (e.g. RNP 4).

RNP 4

(c) For RNP 4, at least two LRNSs, capable of navigating to RNP 4, and listed in the AFM/POH, may be operational at the entry point of the RNP 4 airspace. If an item of equipment required for RNP 4 operations is unserviceable, then the pilot-in-command may consider an alternate route or diversion for repairs. For multi-sensor systems, the AFM/POH may permit entry if one GNSS sensor is lost after departure, provided one GNSS and one inertial sensor remain available.

AMC1 NCO.IDE.H.195(a) Navigation equipment

NAVIGATION EQUIPMENT — RNAV SUBSTITUTION

An RNAV system may be used to substitute for conventional navigation aids and radio equipment, without monitoring of the raw data from conventional navigation aids, under the conditions defined in AMC1 NCO.IDE.A.195(a).

GM1 NCO.IDE.H.195(a) Navigation equipment NAVIGATION EQUIPMENT — SCOPE OF RNAV SUBSTITUTION

(a) Applications of RNAV substitution include use to:

(1) determine aircraft position relative to or distance from a VOR, marker, DME fix or a named fix defined by a VOR radial or NDB bearing;

(2) navigate to or from a VOR, or NDB, except as lateral guidance in the FAS of an IAP;

(3) hold over a VOR, NDB, or DME fix;

(4) fly an arc based upon DME;

(5) fly an overlay of a conventional departure, arrival, approach or route except as lateral guidance in the FAS of an IAP.

(b) RNAV substitution for ADF, marker and VOR may be used where airborne and/or ground-based equipment is not available.

(c) RNAV substitution for DME may be used where the ground-based DME transponder is unserviceable or the airborne DME transceiver is found to be unserviceable in flight. Caution must be exercised by the pilot-in-command when calculating and using GNSS distances to the active waypoint as reference points are often different.

GM2 NCO.IDE.H.195(a) Navigation equipment

NAVIGATION EQUIPMENT — SUITABILITY OF THE RNAV SYSTEM FOR RNAV SUBSTITUTION

GNSS (E)TSOs are referenced in AMC1 NCO.IDE.A.195(a) since most of the aircraft conducting NCO are equipped with an RNAV stand-alone system which exclusively bases its positioning on GNSS.

GM3 NCO.IDE.H.195(a) Navigation equipment

NAVIGATION EQUIPMENT — RNAV SUBSTITUTION — OPERATING PROCEDURE

Although RNAV substitution may not be used for lateral guidance in the FAS, this does not preclude the use of the RNAV system to fly the FAS, provided that raw data from the associated conventional navigation aids is monitored.

AMC1 NCO.IDE.H.195(b) Navigation equipment

APPROPRIATE CONTINGENCY ACTION

An appropriate contingency action is an alternative offered in NCO.IDE.H.195(b) to completion of the planned flight to a safe landing, either at the planned destination or a destination alternate, using normal procedures and using navigation equipment meeting the requirements of NCO.IDE.H.100, installed for redundancy or as a backup.

The contingency action should be considered before flight and take into account the information identified by flight preparation according to NCO.OP.135. It may depend on the flight and availability of navigation solutions (satellites, ground navaids, etc.) and weather conditions (IMC, VMC) along the flight.

The contingency action addresses partial loss of navigation capability. An appropriate contingency action to meet the requirements of NCO.IDE.H.195(b) does not rely on the performance of any function of the item of equipment whose potential failure is being considered. For example, in considering the failure of a VOR/LOC/DME receiver, none of the functions of that receiver should be relied upon in the contingency action.

Examples of contingency actions include:

— seeking navigational assistance from ATS, using communication, navigation and surveillance systems that remain operational, to enable a safe instrument approach or a safe descent to VMC;

— unusually long periods of dead reckoning.

A contingency action is required such that the failure of one item of navigation equipment has a reasonable likelihood of a safe outcome to the flight, consistent with other risks to which the operation is exposed.

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.

AMC1 NCO.IDE.H.205 Management of aeronautical databases

AERONAUTICAL DATABASES

(a) When the operator of an aircraft uses an aeronautical database that supports an airborne navigation application as a primary means of navigation used to meet the airspace usage requirements, the database provider should be a Type 2 DAT provider certified in accordance with the relevant Kingdom of Thailand Civil Aviation Regulation for providers of air traffic management/air navigation services and other air traffic management functions.

GM1 NCO.IDE.H.205 Management of aeronautical databases

AERONAUTICAL DATABASE APPLICATIONS

(a) The certification of a Type 2 DAT provider in accordance with the relevant Kingdom of Thailand Civil Aviation Regulation for providers of air traffic management/air navigation services and other air traffic management functions ensures data integrity and compatibility with the certified aircraft application/equipment.

GM2 NCO.IDE.H.205 Management of aeronautical databases

TIMELY DISTRIBUTION

The operator should distribute current and unaltered aeronautical databases to all aircraft requiring them in accordance with the validity period of the databases or in accordance with an established procedure if no validity period is defined.

GM3 NCO.IDE.H.205 Management of aeronautical databases

STANDARDS FOR AERONAUTICAL DATABASES AND DAT PROVIDERS

(a) A 'Type 2 DAT provider' is an organisation as defined in the relevant Kingdom of Thailand Civil Aviation Regulation for providers of air traffic management/air navigation services and other air traffic management functions.

GM1.NCO.IDE.H.210 Surveillance Equipment

Information on surveillance equipment is contained in the Aeronautical Surveillance Manual (ICAO Document 9924)

Information on RSP specifications for performance-based surveillance is contained in the Performance-based Communication and Surveillance (PBCS) (ICAO Document 9869)

SUBPART E: SPECIFIC REQUIREMENTS

SECTION 1 - General

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;

(f) persons enter or leave the aircraft during flight; or

(g) the flight falls under the definition of 'maintenance check 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;

(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 Air Navigation Act B.E 2497;

(20) cloud seeding; and

(21) maintenance check flights.

(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.

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:
• Regulatory requirements • Approvals • Environmental conditions (visibility, wind, turbulence, contrast, light, elevation, etc.; unless evident from the checklists) • Stakeholders and their potential interest
Internal context:
• 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 /accident al 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

AMC1 NCO.SPEC.110(f) Pilot-in-command responsibilities and authority

DETERMINATION OF SUPPLEMENTAL OXYGEN NEED

When determining the need for supplemental oxygen carriage and use, the pilot-in-command should:

(a) in the preflight phase:

(1) be aware of hypoxia conditions and associated risks;

(2) consider the following objective conditions for the intended flight:

(i) altitude;

(ii) duration of the flight; and

(iii) any other relevant operational conditions;

(3) consider individual conditions of flight crew members and task specialists in relation to:

(i) altitude of the place of residence;

(ii) smoking;

(iii) experience in flights at high altitudes;

(iv) actual medical conditions and medications;

(v) age;

(vi) disabilities; and

(vii) any other relevant factor that may be detected, or reported by the person; and

(4) when relevant, ensure that all flight crew members and task specialists are briefed on hypoxia conditions and symptoms, as well as on the usage of supplemental oxygen equipment.

(b) during flight:

(1) monitor for early symptoms of hypoxia conditions; and

(2) if detecting early symptoms of hypoxia conditions:

(i) consider to return to a safe altitude, and

(ii) ensure that supplemental oxygen is used, if available.

GM1 NCO.SPEC.110(f) Pilot-in-command responsibilities and authority

DETERMINATION OF SUPPLEMENTAL OXYGEN NEED

(a) The responsibility of the pilot-in-command for safety of all persons on board, as required by NCO.GEN.105(a)(1), includes the determination of need for supplemental oxygen use.

(b) The altitudes above which NCO.SPEC.110(f) requires oxygen to be available and used are applicable to those cases when the pilot-in-command cannot determine the need for supplemental oxygen. However, if the pilot-in-command is able to make this determination, he/she may elect in the interest of safety to require oxygen also for operations at or below such altitudes.

(c) The pilot-in-command should be aware that flying below altitudes mentioned in NCO.SPEC.110(f) does not provide absolute protection against hypoxia symptoms, should individual conditions and aptitudes be prevalent.

GM2 NCO.SPEC.110(f) Pilot-in-command responsibilities and authority

DETERMINATION OF OXYGEN NEED — BEFORE FLIGHT

Detailed information and guidance on hypoxia conditions and symptoms, content of the briefing on hypoxia and assessment of individual conditions may be found in the EASA leaflet ‘Hypoxia’.

DETERMINATION OF OXYGEN NEED — IN FLIGHT

Several methods for monitoring hypoxia early symptoms may be used and some methods may be aided by personal equipment, such as finger-mounted pulse oximeters. Detailed information and guidance on entering hypoxia conditions, on hypoxia symptoms early detection, and on use of personal equipment such as finger-mounted pulse oximeters or equivalent may be found in the EASA leaflet ‘Hypoxia’.

AMC1 NCO.SPEC.115(a) Crew responsibilities

PILOT DUTIES — RECORDING OF FLIGHT TIME

(a) The pilot should only record flight time for the purpose of meeting experience requirements in specialised operations defined in AMC1 ORO.FC.146(e); (f) & (g) and AMC1 SPO.SPEC.HESLO.100 if NCO.SPEC applies.

(b) The list of specialised operations in GM1 NCO.SPEC.100 may be used for the purpose of (a).

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.

(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.

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)

GM1 NCO.SPEC.HESLO.100 Checklist

REFERENCES

The following references to the AMC and GM of TCAR OPS 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 and 4.

SECTION 3 - Human external cargo operations (HEC)

GM1 NCO.SPEC.HEC.100 Checklist

REFERENCES

AMC1 SPO.SPEC.HEC.100 of TCAR OPS 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.

SECTION 4 Parachute operations (PAR)

No specific AMC is available for this section.

SECTION 5 Aerobatic flights (ABF)

No specific AMC is available for this section.

SECTION 6 - Maintenance check flights (MCFs)

GM1 NCO.SPEC.MCF.110 Checklist and safety briefing

SPECIFIC PROCEDURES

Specific preparation for a maintenance check flight (MCF) is essential. In addition to the standard considerations before a typical flight (weather, aircraft weight and balance, pre-flight inspection, checklists, etc.), the pilot should:

(a) inform ATC of the particular MCF;

(b) if needed, agree on the appropriate airspace;

(c) understand the airworthiness status of the aircraft;

(d) assess the complexity of the flight; and

(e) develop appropriate strategies to mitigate potential risks.

The operator planning to conduct an MCF should develop checklists for the in-flight assessment of the unreliable systems, considering relevant abnormal and emergency procedures. When developing the checklists, the operator should consider the applicable documentation available from the type certificate holder or other valid documentation.

The pilot-in-command should only allow on board the persons needed for the purpose of the flight and brief the crew and task specialist on abnormal and emergency procedures relevant for the MCF.

AMC1 NCO.SPEC.MCF.120 Flight crew requirements

SELECTION OF PILOT-IN-COMMAND FOR A LEVEL-A MCF

The operator may select a flight instructor to act as pilot-in-command for a ‘Level A’ MCF on other than complex motor-powered aircraft.

GM1 NCO.SPEC.MCF.125 Crew composition and persons on board

TASK SPECIALIST

The task specialist should be trained as necessary in crew coordination procedures as well as emergency procedures and be appropriately equipped.