

DEPARTMENT OF CIVIL AVIATION

MAURITIUS AIR OPERATOR CERTIFICATION REQUIREMENTS

DEPARTMENT OF CIVIL AVIATION
AIR OPERATOR CERTIFICATION REQUIREMENTS

RECORD OF REVISIONS

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INTRODUCTION

- 1 Pursuant to regulation 11 of the Civil Aviation Regulations 2007, the “issue of the air operator certificate” the AOC applicant and AOC holder is required to comply with the following:

Regulation 11 of the Regulations “Issue of air operator certificates” states:

- (1) A Mauritian aircraft shall not fly on any flight for the purpose of public transport otherwise than under and in accordance with the terms of an air operator certificate granted to the operator of the aircraft under sub-paragraph (2) certifying that the holder of the certificate is competent to ensure that the aircraft operated by him on such flights are operated safely.
 - (2) The Authority shall grant to a person an air operator certificate if he is satisfied that that person is competent having regard, in particular, to his previous conduct and experience, his equipment, organisation, staffing, maintenance and other arrangements, to secure the safe operation of aircraft of the type specified in the certificate on flights of the description and for the purposes so specified.
 - (3) Any person who wishes to apply for an air operator certificate shall submit an application to the Authority in such form and manner, and provide such information, as may be specified in the Air Operator Certificate Requirements (AOCR) and any amendment thereto.
 - (4) The air operator certificate may be granted subject to such conditions as the Authority thinks fit and shall remain in force for the period specified in the certificate.
 - (5) The holder of an air operator certificate shall, at all times, comply with the conditions contained in his air operator certificate and the requirements stipulated in the Air Operator Certificate Requirements (AOCR) and any amendments thereto.”
- 2 By being specifically referred to in Regulation 135 of the Civil Aviation Regulations, this AOCR publication gains the force and effect of the Civil Aviation Regulations for compliance with all its contents and subject matters by any applicant or current holder of a Mauritius AOC. Failure to comply with any of these requirements may result in suspension or revocation or penalties provided under regulations 85 and 137 of the Civil Aviation Regulations and Section 9 of the Civil Aviation Act 1974.
- 3 This AOCR states the necessary conditions, qualities, qualifications, standards and procedures necessary to qualify for and maintain an AOC, as well as to incorporate new practices or procedures to ensure the safety of the traveling public.

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- 4 The Department of Civil Aviation of Mauritius (DCA) will hereafter be referred to as the Authority in the AOCR. This will include any person authorised by him to act on his behalf and any person acting in that capacity.
- 5 Authorised officers are 'authorised persons' for the purpose of the AOCR. These officers report to the Authority and they are responsible for carrying out inspections and making reports to assist the Authority in reaching his decision on the issue, variation, suspension or revocation of an AOC. They are fully authorised, in accordance with the relevant statutory provisions and conditions of the AOC, to examine documents, premises and equipment and to board aircraft in the course of their duties.
- 6 Supplementary advice and information to this publication will be notified in the form of Notices to Airmen (NOTAM), Air Operator Certificate Requirement (AOCR), Aeronautical Information Circulars (AIC), Advisory Circulars (AC), Airworthiness requirements (CARM), Aeronautical Information Publications (AIP), Airworthiness Notices (AN), or any other official publication so issued for the purpose of enabling any of the provisions of the Civil Aviation Regulations to be complied with.
- 7 Queries on the AOCR may be referred to:

Department of Civil Aviation
Flight Operations Division
SSR International Airport

PLAISANCE

Tel: (230) 603 2000
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CHAPTER 1

APPLICATION FOR AIR OPERATOR CERTIFICATE

1 INITIAL APPLICATION FOR AOC

- 1.1 The application for, and grant of, an AOC is a complicated process involving much effort and detailed work by both the applicant and officers from the Authority. Hence, an applicant should contact the Authority (in this case the Department of Civil Aviation Airworthiness/Flight Operations Division (A/FO)) as far in advance as possible, in any case **AT LEAST 6 MONTHS BEFORE** the anticipated start of operations. The time taken to process an application will depend on the completeness of the information submitted and the progress the applicant makes in demonstrating an adequate organisation, method of control and supervision of flight operations, training programme and maintenance arrangements consistent with the nature and extent of the operations specified. Nevertheless, no undertaking can be given that the Authority will be able to grant an AOC within any particular time period.
- 1.2 The Authority has adopted a 5-phase process for systematic and timely handling of all AOC applications. The 5 phases are explained briefly below:

(a) Pre-application discussion phase

This phase commences when a prospective applicant first contacts the Authority with his initial inquiries regarding application for an AOC. A preliminary discussion is held whereby basic information and general certification requirements are discussed, and an application form DCA AWF 12 is issued when the applicant desires to continue with the AOC application. When the form is correctly completed and returned, a pre-application meeting is arranged, at which the applicants key management and staff will meet with the Authority to discuss the plans and specific aspects of the proposed operation.

(b) Formal application phase

This phase begins when the applicant submits the completed DCA AWF 12 form and required manuals and exposition documents (maintenance control manuals-see Chapters 2, 4 and 8) to the Authority. This phase shall commence at least 6 months before the desired start of revenue operations. After preliminary review to verify that the applicant has submitted the required information and attachments, the Authority will arrange a formal application meeting with the applicant's management team where detailed examination of all aspects of proposed aircraft types and their operations, management structure, ground and flight crew structure and training, premises, equipment, etc, will be conducted. The applicant's proposed schedule of events for submissions, inspections and training of the Authority's officers on the proposed aircraft type(s) (at the applicant's expense) will be examined and agreed by both parties to guide the subsequent phases.

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(c) Document evaluation phase

The Authorised Officers from the Authority will begin a thorough evaluation of all the manuals, documents and attachments etc that are required by regulations to be submitted to support an AOC application so as to ensure that all documentation meet standards and requirements. All manuals and documents submitted will be retained by the Authority during the currency of an AOC. (see Chapter 2).

(d) Applicant's demonstration and Authority's evaluation phase

The Authority requires an applicant to demonstrate his ability to comply with regulations and safe operating practices before actual revenue operations can begin. These demonstrations are to prove to the Authority that the operator has an adequate organisation, method of control and supervision of flight operations, training programme as well as ground handling¹ and maintenance arrangement that are consistent with the nature and extent of operations specified. These may include one or more proving flights where actual performance of activities (maintenance and ground handling and the use of dummy loads where appropriate) and operations, are observed and evaluated by the Authority. All operations must be performed in accordance with applicant's documents and manuals as reviewed in the previous phase. However the Authority may need a sufficient period and extent of operational proving flights and overall safe operations before concluding this phase.

(e) Formal award of AOC

After all documentation has been assessed to be complete and the demonstration phase has been completed satisfactorily, and if the applicant is assessed to be competent and fit, the Authority will prepare and present the AOC and an attachment (containing authorisations, limitations and provisions specific to each applicant) to enable the applicant to commence revenue operations.

- 1.3 If any significant deficiency is revealed at any stage of the evaluation process and the deficiency cannot be resolved by the interaction between the Authority and the applicant, the Authority will advise the applicant in writing of the nature of the deficiency and the actions required, failing which no further action will be taken by the Authority to process the application.

1: Ground handling includes services that are necessary for an aircraft's arrival at and departure from, an airport, other than air traffic services.

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2 DOCUMENTS TO BE SUBMITTED

- 2.1 The following documents must be submitted to the Authority:
- (a) Operations Manual(s);
 - (b) Training Manual(s);
 - (c) Engineering Exposition Document(s)/ Maintenance Control Manual(s);
 - (d) Aircraft Flight Manual and Performance Schedules;
 - (e) Accident Prevention and Flight Safety Program Manual; and
 - (f) Any other relevant manuals/documents

3 FORM OF CERTIFICATE

- 3.1 Certificates are normally granted for a period of one year, but this may be varied at the sole discretion of the Authority. The type(s) of aircraft that may be flown and the purpose for which such flights are made will be specified in the AOC.
- 3.2 A specimen AOC and the Attachment are at Appendix A.

4 APPLICATION FOR SECOND OR SUBSEQUENT AOC

- 4.1 The period of validity of an AOC will not be extended or renewed.
- 4.2 Holders of AOC must apply for a subsequent AOC using form DCAAWF 12 “Application for the Second or Subsequent Issue of Air Operator’s Certificate” at least 30 days before the expiry date of the current AOC.
- 4.3 No special inspection will normally be required for issue of a subsequent AOC to replace the one expiring. The audit and routine inspection results conducted by the Authorised Officers will be used to assess whether the operator can continue to hold an AOC.

5 VARIATION TO EXISTING AOC

- 5.1 If the holder of an AOC wishes to apply for the variation of its certificate (e.g. inclusion of an additional aircraft type, inclusion of an additional destination or extension of routes) the holder of the AOC shall submit to the Authority (form DCAAWF 12) giving full details of the requested amendments. The minimum notice required is 30 days, but the AOC holder is advised to give as much notice as possible. No undertaking can be given that an application will be dealt with by the Authority within any particular period.

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- 5.2 On receipt of form DCA AWF 12, the Authorised Officers assigned to the operator will make a special inspection which may include the requirement to observe a proving flight. After all documentation is complete and upon satisfactory completion of the special inspection, the relevant amended page of the AOC or attachment will be sent to the operator as approval for the requested variation to the AOC.
- 5.3 The operator shall request the Authority's approval in writing of any intended change of the following (where applicable at least 30 days before desired change):
- (a) Name of the organization specified in the Air Operator Certificate.
 - (b) Address of the organization specified in the Air Operator Certificate.
 - (c) The applicant's/operator's Chief Executive or persons nominated in accordance with paragraph 4 of Chapter 8 of this AO CR.
 - (d) The approved facilities or capabilities.

Note: Justification of the suitability of a person to become Chief Executive will be required.

6 ROUTINE LIAISON AND INSPECTION

- 6.1 During the currency of an AOC, the Authority will require periodical reports on the continued competence of the holder. For this purpose, the Authorised Officers assigned to the operator will make liaison and inspection visits to each operating base, line stations and to the handling agents appointed by the operator.
- 6.2 All Authorised Officers are authorised to fly in the operator's aircraft in the course of normal operations. Arrangements for such flights will normally be made in advance, but the right is reserved for Authorised Officers to board aircraft without prior notice. Operators should advise their aircraft commanders accordingly. All Authorised Officers carry an authorisation card which will be produced on request.
- 6.3 The Authority shall not pay any fee or fare to the AOC holder in respect of the carriage of an Authorised Officer on duty, but operators may wish nevertheless to issue a firm passenger ticket. There may be circumstances when Authorised officers may be required to be listed as crew in the General Declaration to facilitate conduct of their official duties.
- 6.4 Operators will be visited from time to time by Authorised Officers. The primary purpose of their visits will be to observe the operations of the AOC holder. This will include the training and testing and qualifications of the operating staff and agents/contractors of the AOC holder.
- 6.5 The Authorised Officers are also empowered to inspect flight crew and LAE licences and records of the AOC holder the agents.

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7 MANAGEMENT AND EXECUTIVE STAFF

7.1 A sound and effective management structure is essential. It is particularly important that the operational management should have proper status in the organisation and be in suitably experienced and competent hands. The duties and responsibilities of managers, senior executives and designated representatives in charge of operational control must be clearly defined in writing, and chains of responsibility firmly established. The number and nature of the appointments may vary with the size and complexity of the organisation. The Authority will need to be satisfied that the management organisation is adequate and properly matched to the operating network and commitments.

7.2 Personnel

7.3 The Chief Executive (who shall be the accountable manager) of the operator shall nominate the following persons for the Authority's acceptance:

- (a) Director of Flight Operations – He/she should have experience working in an airline or equivalent organisation.
- (b) Director Engineering – He/she should have experience working in an engineering capacity in an airline or equivalent organisation.
- (c) Chief Pilot – He/she should hold a ATPL and appropriate ratings for at least one of the aircraft used by the operator.
- (d) Director Safety – He/she should hold a ATPL and appropriate ratings for at least one of the aircraft used by the operator, or he/she should have experience working in an airline or equivalent organisation on aviation safety.
- (e) Quality Managers for Operations and Maintenance (see paragraph below on Quality System)
- (f) Director of Training – He/she should hold a ATPL and appropriate ratings for at least one of the aircraft used by the operator. He should also hold a DCA or equivalent Instructor pilot rating.

7.4 These nominated persons shall be capable and responsible persons who are conversant with the Civil Aviation Regulations, the Air Operator Certificate Requirements, the Mauritius Civil Airworthiness Requirements and the relevant Annexes to the Convention on International Civil Aviation, and have adequate qualifications and experience for the duties concerned

7.5 The Authority may, depending on the type of operations require the operator to nominate additional persons to ensure the safety of the operations.

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7.6 Quality System

- 7.7 The operator shall establish a quality assurance system and designated quality manager(s) to monitor the compliance with, and adequacy of, procedures required to ensure safe operational practices and airworthy aircraft. Compliance monitoring shall include a direct feedback system to the accountable manager to ensure corrective action as necessary.
- 7.8 The requirements for the Engineering quality system are detailed in Chapter 8. The Flight Operations quality system shall include a quality assurance programme that contains procedures designed to verify that all operations are being conducted in accordance with all applicable requirements, standards and procedures. The flight operations quality assurance programme shall be described in the Operations Manual approved by the Authority.
- 7.9 The positions held by key personnel will be listed in the attachment of each AOC. See paragraph 5.3 of this chapter for any intended changes.

8 FEES PAYABLE

- 8.1 A non-refundable fee shall be paid to the Authority by the applicant for the initial issue of an AOC and for subsequent certificates.

9 DECISIONS OF THE AUTHORITY

- 9.1 Under the provisions of the relevant statutory provisions the Authority may refuse to grant a new or [subsequent AOC](#) Certificate.
- 9.2 If, during the currency of a Certificate, the Authority ceases to be satisfied that the holder is competent, the Authority may suspend, revoke or vary the Certificate. The holder would normally be given at least one month's notice of the Authority's intention to take such action, but provision is made for immediate suspension, revocation or variation if the Authority [certifies deems](#) necessary in the interests of the safety of air navigation.
- 9.3 If an operator ceases operations for which the AOC was issued, or if the Authority revokes or suspends the AOC, the AOC is to be immediately returned to the Authority.

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CHAPTER 2

OPERATIONS MANUAL

1 PURPOSE AND SCOPE OF MANUALS

- 1.1 It is a statutory requirement that an operations manual shall contain “all such information and instructions as may be necessary to enable the operating staff to perform their duties”. The design of these manuals shall observe human factors principles.
- 1.2 By definition included in the Civil Aviation Regulations, “operating staff” means the servants and agents employed by the operator, whether or not as members of the crew of the aircraft, to ensure that the flights of the aircraft are conducted in a safe manner, and includes an operator who himself performs these functions.
- 1.3 It can readily be seen, therefore, that the form and scope of manuals will vary considerably with the nature and complexity of the operator’s organisation and the types of aircraft in use. A “manual” will normally comprise a number of separate volumes, and may well include individual forms such as prepared navigational flight plans supplied by the operator to his crew. Instructions and information to particular groups of operating staff – e.g. Traffic Manuals, Cabin Crew Manual, aircraft crew rostering instructions, safety and accident prevention manual and information on weight and balance supplied to handling agents – are all part of the operations manual. They must all be lodged with the Authority, together with copies of all amendments and temporary instructions. (see paragraph 10 of this chapter on Route Guide).
- 1.4 A list of subjects to be covered in an operations manual is specified in Part 1 of the Twelfth Schedule of the Civil Aviation Regulations. The purpose of this Chapter is to give some indication of the manner in which both the specific and general requirements (paragraph 1.1 above) should be met. For more accurate content and format of the operation manual reference to JAR OPS-1 and 3 is required. Only the operation of aircraft will be dealt with; detailed instructions on aircraft maintenance (such as those included in a Maintenance Control Manual or in Maintenance Schedules) are attended to by the Authority’s Airworthiness Section which will be able to provide any information or guidance that may be needed.
- 1.5 The operations manual will be regarded by the Authority as a primary indication of the standards to be achieved by an operator. The commercial operation of aircraft is a highly complex matter and must be based on clearly defined standards and procedures. The form and scope of a manual will vary with the size of the undertaking, but the basic principles remains the same, even though an operator may in effect, be prescribing standards and procedures for himself. The adequacy of a manual will be assessed in large measure on this basis.
- 1.6 Great importance will be attached to the suitability of manuals for regular use by the operating staff and in particular by aircraft crew in flight. For all but the simplest of

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operations, the division of the manual into a number of separate volumes will be essential. Manuals should be divided in such a way that essential information is immediately available on the flight deck, and extracts or “digests” of information and instructions may sometimes be necessary to supplement drill cards and check lists.

- 1.7 Each copy of a manual should normally bear a serial number and a list of holders should be maintained by the person responsible for issuing amendments. Where this system is not used, an operator must have satisfactory alternative arrangements for controlling the issue and amendment of manuals. In any case, a method of acknowledgment of receipt of amendments by manual holders should be instituted. Each volume of a manual must be numbered and bear a title and index giving a clear indication of its scope. The title of the person or department responsible for the issue of the manual should also be indicated. At the front of each volume there must be an amendment page to indicate amendment number, date of incorporation, signature or initials of person amending, and page or paragraph affected. Amended pages should be dated. The numbering of pages, sections, paragraphs, etc must be orderly and systematic so as to facilitate immediate identification of any part of the subject matter. The standard of printing, duplicating, binding, section dividers, indexing of sections, etc must be sufficient to enable the document to be read without difficulty and to ensure that it remains intact and legible during normal use.
- 1.8 The amendment of a manual in manuscript will not be acceptable. Changes or additions, however slight they may be, should normally be incorporated by the issue of a fresh or additional page on which the amended material is clearly indicated. The amendments shall be submitted to the Authority for approval before issue to the users. Exceptions from the formal approval for the amendments will be issues relating to safety and issues requiring immediate implementation. Under such circumstances, the operator may seek verbal approval in principle followed by a formal request for approval in writing.
- 1.9 It is the responsibility of operators to provide adequate instructions and accurate information to their operating staff. Authorised Officers will make random sample checks of manuals; etc lodged with the Authority and will suggest amendments where they appear to be necessary. The primary purpose of these checks will be to verify the adequacy of the operator’s systems and procedures for keeping instructions and information under review and for issuing timely amendments as necessary. There can be no question of the Authority or its Authorised Officers assuming responsibility for the detailed information provided in manuals. This responsibility rests with the operator who should designate a suitably qualified person or persons to see that it is properly discharged.

2 CREW TO BE CARRIED

- 2.1 It will normally be sufficient if the minimum crew of public transport is specified in the manual for each type of aircraft, together with a reference to the necessity for specialist crew members where appropriate. Note that the minimum crew for public transport will not necessarily be the same as the minimum crew specified in the Certificate of Airworthiness. In some cases, the operator will need to consider whether the particular circumstances of the operation call for the carriage of additional flight

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crew. It is a statutory requirement that an aircraft shall have a flight crew adequate in number and designation to ensure the safety of the flight.

- 2.2 Except where the flight crew is limited to one or two pilots, brief instructions should be included as to the order and circumstances in which command is to be assumed by members of the crew.
- 2.3 Detailed instructions must be included as to the circumstances in which co-pilots may be permitted to fly the aircraft.

3 DUTIES OF AIRCRAFT CREW AND OTHER OPERATING STAFF

3.1 In this context, the term “operating staff”, as distinct from the aircraft crew, can be taken to mean staff having specific duties in relation to particular flights, which fall within the general pre-flight and in-flight responsibilities of the aircraft commander. The manual must define the duties and responsibilities of people employed as:

- (a) commander of the aircraft; the responsibilities and duties for the conduct of the operation and safety of the aircraft and all persons on board, during flight;
- (b) flight operations officers/flight dispatchers, if the operator’s approved method of control and supervision of flight operations requires the use of flight operations officers/flight dispatchers;
- (c) rostering and scheduling staff.

3.2 Flight operations officers/flight dispatchers shall, in conjunction with the operator’s method of control and supervision of flight operations:

- (a) assist the commander in flight preparation and provide the relevant information required;
- (b) assist the commander in preparing the operational and ATS flight plans, sign when applicable and file the ATS flight plan with the appropriate ATS unit; and
- (c) furnish the commander while in flight, by appropriate means, with information which may be necessary for the safe conduct of the flight.

3.3 In the event of an emergency, a flight operations officer/flight dispatcher shall:

- (a) initiate such procedures as outlined in the operations manual while avoiding taking any action that would conflict with ATC procedures;
- (b) convey safety-related information to the commander that may be necessary for the safe conduct of the flight, including information related to any

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amendments to the flight plan that become necessary in the course of the flight; and

- (c) where necessary, notify the appropriate authorities without delay and request for assistance if required, if the emergency endangers the safety of the aircraft or persons and becomes known first to the flight operations officer/flight dispatcher.

Note: It is equally important that the commander also conveys similar information to the flight operations officer/flight dispatcher during the course of the flight, particularly in the context of emergency situations.

- 3.4 In defining the duties of members of the aircraft crew, the operator should include instructions on (Civil Aviation Regulations reference Sixth Schedule):
 - 3.4.1 The briefing of passengers on emergency exits and equipment (including, where appropriate, life-jacket demonstration and use of “automatic drop-out” oxygen equipment) and restrictions of personal radio, tape recorder, handphones, laptop computers, etc in flight.
 - 3.4.2 Who, in the absence of competent ground engineering staff, is responsible for supervising re-fuelling and ensuring that filler caps, re-fuelling valves, freight hold doors etc are secured?
 - 3.4.3 Who, in the absence of competent traffic staff, is responsible for supervising the loading of the aircraft?
 - 3.4.4 The duties of special personnel such as car marshallers and animal attendants.
 - 3.4.5 The responsibility, when an APU is ground running and passengers are on board the aircraft, or are in the process of embarking or disembarking, for ensuring that there are satisfactory arrangements for cabin crew to be warned immediately of any APU emergency condition which might require the rapid evacuation of passengers from the aircraft.
 - 3.4.6 The responsibility for taking precautions for the safety of passengers when they are permitted to embark, disembark or to remain on board during fuelling operations. There should be a nominated qualified person in attendance who shall be ready to initiate and direct an evacuation of the aircraft by the most practical and expeditious means available. Two-way communications shall be maintained by the aircraft’s intercommunication system or other suitable means between the ground crew and supervising and qualified personnel on board the aircraft.
 - 3.4.7 The responsibility for ensuring correct completion of the Technical Log, day to day servicing and any pre-flight maintenance checks, ground de-icing and anti-icing operational procedures and checks before flight or any other special pre-flight servicing, i.e. when a flight is to be planned or expected to operate in suspected or known ground icing conditions, the flight shall not commence unless the aircraft has been inspected for icing and, if necessary, has been given appropriate de/anti-icing

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treatment. Accumulation of ice or other naturally occurring contaminants shall be removed so that the aircraft is kept in an airworthy condition prior to take-off.

- 3.4.8 Limitations on the extent to which pilots and flight engineers may be allowed to operate on more than one aircraft type or variant.

4 LIMITS ON FLIGHT TIMES AND REST PERIODS

- 4.1 There are statutory requirements in this connection and operators should be familiar with the relevant provisions of the Civil Aviation Regulations.
- 4.2 Subject to the overriding provisions of the Civil Aviation Regulations, it is the responsibility of the operator to establish a maximum flying duty period and a minimum rest period appropriate to the nature of the flight operations. The documents will have to be based on the UKCAA CAP 371. Comprehensive guidance and instructions must be included in the manual for the benefit of both crew and those members of the operating staff who are concerned with rostering and scheduling. It may be necessary to issue one set of instructions for crew and a separate, more detailed set for other operating staff.
- 4.3 Factors to be taken into account in producing these instructions, and the nature of the limitations to be specified, are indicated in Appendix C. Compliance with this Appendix is an essential requirement for the holders of an AOC. It is recognised, however, that certain operations may present special features warranting some easement of the limitations detailed in Appendix C. The Authority is prepared to consider individual cases on their merits. Any concessions agreed upon in this way would be in relation to particular schedules and duty periods and it would not be permissible for them to be reflected in the operator's general instructions on flight, duty and rest periods. Requests for such concessions should be made to the Authority in writing, giving full details of all the relevant factors.
- 4.4 The extent to which an aircraft commander is authorised in abnormal circumstances to exceed the operator's limitations on flying duty periods must be clearly defined in the manual. Instructions on this point should be as clear and concise as possible, so that commanders can readily determine the extent of their discretionary powers.
- 4.5 Commanders must be instructed to file a report each time they exercise the discretion conferred upon them by the operator. If the normal limitations are exceeded by more than 2 hours, the report must be forwarded by the operator to the Authority. In other cases, the report should be retained by the operator for a period of six months. Authorised officers may examine such reports from time to time.
- 4.6 Instructions must be issued to crew covering abstention from alcoholic drinks for a suitable period prior to flight. The minimum acceptable period will be eight hours. Crew must also be advised of the precautions to be taken if they are undergoing medication

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- 4.7 Responsibility within an operator's organisation for issuing instructions and making decisions on questions of flight, duty and rest periods and for processing discretion reports must be clearly defined and assigned to a member of the executive staff. The name of the person concerned, or the title of the office that he holds, must be included in the operations manual.
- 4.8 Operators are required to maintain and provide readily interpreted records for each aircraft crew member. It follows that there must be suitable arrangements for collecting the information necessary to compile the records. Accurate records are essential to persons responsible for the rostering of aircraft crew.

5 TECHNICAL PARTICULARS OF AIRCRAFT

- 5.1 The operator shall provide, for each aircraft type operated, the "technical particulars of the aircraft" as part of the operational manual. The operator should take care to distinguish between specific information to be used in the course of flight operations and the more general basic information that a pilot might need to prepare for a technical type rating examination. If detailed descriptive matter is included as part of the manual, it should be in a separate volume. Information on the following matters, in particular, should be provided in a form suitable for use as an immediate reference in day-to-day operations:
- 5.1.1 Action to be taken in the kind of technical emergency or fault that cannot be covered by a set drill of vital actions. Information should be provided about the effect on essential systems and services of serious faults such as the loss of generated electrical power. Information to be provided will vary with the type of aircraft and together with the emergency drills, it should be in a readily identified section of the manual (e.g. on distinctively coloured pages).
- 5.1.2 Procedure for pre-departure inspection as required by the maintenance schedule including a check of the fuel system for water content.
- 5.1.3 Replenishment of the aircraft's fuel, oil, coolant, hydraulic fluid, de-icing and water methanol supplies to an approved specification. Checking of accuracy of fuel uplift and total contents, particularly for operations in remote areas.
- 5.1.4 Supervising refueling and the topping up of tyres, oleos, de-icing and hydraulic systems, including oxygen and air reservoirs. The refueling information must include any specific precautions called for by:
- (a) the use of wide cut fuels; and
 - (b) the "off aerodrome" situation where either a fuelling vehicle or a barreled supply is used.
- 5.1.5 Calculation of critical airspeeds and mach numbers, variable thrust, and tail plane settings.
- 5.1.6 Maker's and/or operator's limitations affecting the handling of engines and pressurisation systems.

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- 5.1.7 Procedure and precautions to be observed in order to jettison fuel.
- 5.1.8 Compliance with any special handling instructions.
- 5.1.9 Procedure and precautions to be observed in response to ACAS, GPWS and windshear alerts and warnings.
- 5.2 With regard to aircraft performance, operators should normally provide their commanders with information and simplified data from which they can readily determine without reference to a Flight Manual or Performance Schedule the maximum weight at which they may take-off or land on a particular flight. The maximum weight referred to is that resulting from the statutory weight and performance requirements or limitations such as zero fuel weight contained in the Flight Manual. In many cases (on regular or scheduled operations) it would only be necessary to indicate that there was no restriction under the performance requirements; in others it might be necessary to indicate which of the requirements is critical and to provide a tabular or other clear presentation of limiting weights in varying conditions of wind and/or temperature. There would also be instances in which it would be both practicable and desirable for the operator to indicate any special flight procedures – such as minimum height for setting course in IMC or emergency turn after take-off in the event of engine failure – essential to secure compliance with the performance requirements in relation to the obstacle clearance data provided in the Aerads, Jeppesen or any other charts approved by the Authority or by the State in which the aerodrome is located.

Note: As standard instrument departure (SID) routes do not guarantee adequate terrain clearance for all aircraft in the engine out case, the operator shall have checked that the performance requirements are met for all SIDs used by the company aircraft. Similarly, any emergency turn after take-off onto routes contained in the aircraft's operations manual, and approved for use by the local air traffic control, must also have been checked for compliance with the performance requirements.

- 5.3 Information should also be given on the following points:
 - 5.3.1 Landing or take-off on runways affected by water, snow, slush or ice, with particular reference to techniques, the additional distances required and the crosswind limitations.
 - 5.3.2 Allowances to be made for the effect of varying surface conditions where grass strips are used.
 - 5.3.3 Crosswind limits for take-off and landing. It is not sufficient to repeat a statement in a flight manual that a particular crosswind component has been found to be acceptable; operators' limitations should be stated in unequivocal terms. In gusty conditions, the limit shall apply to the mean of the reported steady wind and reported gusts. Limits in excess of any figure mentioned in the flight manual will not be acceptable. Lower limits must be stated for use on a contaminated runway and where appropriate for

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landing with control, steering, or retarding systems not fully serviceable or following a power unit failure.

- 5.3.4 Minimum strip widths to be available after the clearance of snow, together with the maximum height of associated snow banks.
- 5.3.5 For light aircraft, maximum permissible wind velocities for taxiing, take-off and landing.
- 5.3.6 Allowances to be made for the effect of unserviceable devices such as flaps, reversers, air brakes, etc.
- 5.3.7 Drift-down procedures to be followed on specific routes after failure of an engine, if the aircraft's stabilising altitude is likely to be critical in terms of safety height: further guidance on the subject is at Appendix E.
- 5.3.8 Special handling techniques and/or routing procedures resulting from noise abatement regulations related to particular airfield and runways. The noise abatement procedures specified for any one aeroplane type should be the same for all aerodromes, unless otherwise approved by the Authority: further guidance on this subject is at Appendix F
- 5.3.9 Instructions on the conditions under which ferry flights with one engine inoperative can be undertaken, with details of the procedures to be followed.

Note: In respect of any operating conditions for which no relevant data is provided in the flight manual or performance schedule, it is more important that the operator seeks information and approval of the data to be used from the Authority.

- 5.4 A statement should be included in the manual to the effect that simulated instrument flight, and the simulation of emergency situations which might affect the flight characteristics of the aircraft, are prohibited on passenger or cargo carrying flights.

6 FUEL FORMULA AND MANAGEMENT

6.1 Aeroplanes – Fuel Planning

- 6.1.1 To ensure departure with sufficient fuel for the flight and adequate reserves the Standard Fuel Formula in paragraph 6.2 must normally be followed. In special circumstances and under certain conditions alternate formulae may be used, as detailed in paragraph 6.3, (Minima Fuel Reserves) paragraph 6.4, (Planning on an Alternative Destination with Redespatch in Flight) and 6.5 (Island Hold) of this chapter.

- 6.1.2 Whichever formula is used, allowance should be made for, as appropriate

- (a) auxiliary power unit;

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- (b) operation of systems such as de-icing which affect fuel consumption;
 - (c) a congested air traffic area where delays are likely;
 - (d) airfield where there is a need to climb to or descend from the en-route safety altitude whilst in the vicinity of the airfield;
 - (e) accuracy of the aircraft fuel gauges.
- 6.1.3 There should be instructions and guidance on the effect on fuel consumption of engine or system failure.
- 6.1.4 Where necessary requirements for oil, water methanol, etc as well as fuel should be specified.
- 6.1.5 Commanders must be allowed to carry more than the minimum fuel, at their discretion.
- 6.2 Standard Fuel Formula**
- 6.2.1 The normal minimum fuel to be loaded before start-up shall be the total of:
- (a) start-up and taxi fuel: this may be a standard fixed amount; and
 - (b) fuel to destination: take-off, climb, cruise, descent, approach and landing; and
 - (c) contingency fuel : a small percentage, usually 5% of (b) to allow for errors in forecast winds, navigation inaccuracies, ATC restrictions on desired flight level, etc; and
 - (d) alternate fuel: go around from decision height at destination, climb, cruise, descent approach and landing at alternate; and
 - (e) contingency fuel; normal 5% of (d); and
 - (f) holding fuel, which shall be at least?
 - (i) 45 minutes fuel for propeller driven aircraft; or
 - (ii) 30 minutes fuel at 1500 feet above the alternate aerodrome under standard temperature conditions for turbo-jet aircraft.
- 6.2.2 To cater for very short sectors, and for alternates which are close to the destination, operators should specify a minimum contingency fuel and a minimum diversion fuel.

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6.3 Minimum Fuel Reserves

6.3.1 If the weather forecast for the destination gives a reasonable certainty that the landing may be made under visual meteorological conditions, the reserves in paragraph 6.2.1 (d), (e) and (f) may be replaced by:

- (a) alternate fuel (from decision height at destination to landing at alternate) plus 5% contingency; or
- (b) 60 minutes holding fuel, whichever is the greater.

6.3.2 Reducing normal fuel reserves to Minimum Fuel Reserves may only be permitted provided that:

- (a) the operator has specified appropriate weather minima; and
- (b) the destination aerodrome must have at least two independent runways available and suitable for landing; and
- (c) the operator prohibits the use of Minimum Fuel Reserves to destinations which pose special problems.

6.4 Planning on an Alternative Destination with Redespatch in Flight

6.4.1 The contingency fuel in paragraph 6.2.1(c) may be reduced to 5% of the planned fuel burn from a decision point to the final destination, but not below the operator's stated minimum contingency fuel. The total fuel load calculated in this way shall be increased if necessary to not less than the fuel load needed for flight to the alternative destination, calculated in accordance with paragraph 6.2 or paragraph 6.3.

6.4.2 The alternative destination must be available for landing at the appropriate time, and its weather forecast must allow a technical stop to be made.

6.5 Island Hold

6.5.1 Where because the destination is geographically isolated, there is no usable alternate airfield, items (d), (e) and (f) of paragraph 6.2.1 may be replaced by a holding reserve related to statistical data on local weather conditions. The minimum acceptable will be two hours fuel at normal cruise consumption. Such airfields are to be listed in the operations manual.

6.6 Aeroplanes – In flight Fuel Management

6.6.1 Crew must be given suitable instructions on monitoring of fuel used and fuel remaining. The records required by these instructions should be retained for at least three months.

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- 6.6.2 When an aircraft has been despatched under paragraph 6.4 a decision must be made at or before decision point whether to land at the alternate destination or re-despatch to the final destination. The manual must contain instructions that the aircraft may only be re-despatched if the fuel on board is sufficient to reach the final destination plus contingency paragraph 6.2, or reserves of paragraph 6.3.1 if all the conditions of paragraph 6.3.2 are met.
- 6.6.3 The manual must state that in the event of a diversion, the aircraft is to arrive overhead the alternate with a stated minimum holding fuel. It should be pointed out that if departure fuel was the minimum required by paragraph 6.3, this may involve a decision to divert before reaching destination.
- 6.6.4 When any abnormal fuel procedure is used in flight, the commander must be informed and at least two crew members must monitor the operation.
- 6.6.5 Instructions may be included in the manual to allow crew to continue a flight to a destination when normal reserve fuel will no longer be available. Safeguarding conditions associated with those instructions should include:
- (a) such a decision to continue should only be made when one hour or less from the destination and when close to a usable en-route aerodrome; and
 - (b) the usable fuel remaining must be sufficient to fly to destination aerodrome, hold for 30 minutes at that aerodrome in the conditions of paragraph 6.2.1 (f) of this chapter, make an approach to land, and include a contingency allowance; and
 - (c) the actual and forecast meteorological conditions at the destination will permit a visual approach to landing until one hour after ETA. Account of any significant crosswind on the runway should also be considered; and
 - (d) there are no known or probable ATC delays for the period from ETA to ETA plus one hour; and
 - (e) there are at least two independent runways available and suitable for landing.

6.7 Helicopters

- 6.7.1 The fuel requirements for helicopters for flights planned in IMC, or off-shore, or over hostile terrain (i.e. where forced landings are not possible or which present a consequential survival problem) should follow those set out above for aeroplanes. The alternate landing site on which diversion fuel is calculated must meet the single engine landing requirements of the helicopter.
- 6.7.2 For flights in VMC over hospitable terrain, the capability of the helicopters to land safely away from aerodromes should be taken into account. The minimum fuel for such flight should be taken into account. The minimum fuel for such flights should be

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sufficient for flight to destination, plus 10 per cent contingency, plus 20 minutes at best range speed, to allow for air traffic delays, site reconnaissance, etc.

- 6.7.3 Flights initiated with Minimum Fuel Reserves should not enter IMC unless all the fuel requirements for IMC flight to destination and alternate with holding and contingency reserves are available at the time flight in IMC is commenced.
- 6.7.4 A minimum in-flight indicated fuel state should be set down for each type of helicopter. This is particularly important when specialised activities, such as aerial crane work are conducted.

7 USE OF OXYGEN AND PROVISION OF EQUIPMENT

- 7.1 Sufficient information should be included to enable the commander to verify that adequate oxygen and associated equipment are carried to meet the statutory requirements and to guide the crew on its use and the circumstances for the continued use of oxygen.
- 7.2 If oxygen is not carried, instructions should be included on restriction of operating heights.

8 CHECK LISTS

- 8.1 The drills and checks to be followed in the operation of the aircraft, including those for abnormal or emergency conditions, should be listed in full in the manual – preferably in a separate volume. (See paragraph 14 on Emergency Evacuation). Checklists of emergency equipment and instructions on their use should also be provided. The pilot-in-command shall ensure that the checklists are complied with. The design of the checklists shall observe human factors principles.
- 8.2 There should be items in the normal drill requiring the aircraft commander to brief other flight crew members on the following matters:
 - 8.2.1 Prior to take-off:
 - (a) the actions to be taken in the event of an emergency arising during or immediately after take-off;
 - (b) any special requirements for take-off in crosswinds and on wet or otherwise contaminated runways;
 - (c) noise abatement procedures;
 - (d) selection of radio aids.
 - 8.2.2 Prior to landing:
 - (a) selection of radio aids;

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- (b) missed approach procedures;
- (c) any special handling or systems requirements for landing;
- (d) selected alternate for diversion.

Note: It is not suggested that these items should be included in checklists in detail; if suitable instructions are provided elsewhere, the word 'briefing' will be sufficient at the appropriate points in the lists.

8.3 Checklists will not be acceptable unless they include detailed requirements for the setting and cross checking of altimeters for all phases of flight. There should also be an item in the normal drills requiring minimum safe altitudes to be checked before descending from cruising level.

8.4 Examples of emergency drills to be covered in checklists are:

- (a) engine failure;
- (b) engine fire and severe engine damage;
- (c) propeller malfunction;
- (d) failure of normal feathering system;
- (e) fuel filter icing;
- (f) relighting of turbine engines;
- (g) bus-bar and other serious electrical failures;
- (h) malfunction of power control systems;
- (i) pressurisation failure and emergency descent;
- (j) cabin/hold fire;
- (k) smoke removal;
- (l) essential actions prior to commencement of emergency evacuation;
- (m) hydraulic failures;
- (n) brake overheat.

8.5 In aircraft operated by two pilots, checklists should be stowed so that they are available to both pilots. If this is not possible, separate drill cards or checklists should be provided for each pilot for use on the flight deck. If the flight crew includes a flight

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engineer or third pilot a separate checklist should be provided for his/her use. In “single pilot” aircraft, checklists should be supplemented by the placarding of vital actions for final approach and landing. Emergency drills should be clearly marked for immediate use and, on larger and more complex aircraft; they should preferably be given on a separate set of cards kept apart from other documents on the flight deck and immediately available. For cabin crew, details of their ditching, crash landing and emergency evacuation drills should be readily available in flight. This can be achieved either by issue to each member of the cabin crew of a copy of their emergency drills which they should be required to carry with them or by stowing the drill cards at appropriate positions in the cabin. All check lists or drill cards must be of a quality sufficient to withstand heavy wear and to remain in legible condition.

8.6 On multi-crew aircraft, the manual should contain clear instructions that checklists are always to be used. On single pilot aircraft, the operator may at his discretion allow in-flight drills to be carried out from memory. When an operator elects to adopt this procedure, he/she must, nevertheless, ensure that the aircraft is provided with a checklist which is readily available to the pilot. Memorised drills must be carried out strictly in accordance with the checklist and emergency drills must be verified as soon as possible by reference to the checklist.

8.7 **Aeroplane search procedure checklist**

8.7.1 The operator shall ensure that all aeroplanes carry a checklist of the procedures to be followed for that aeroplane type in searching for concealed weapons, explosives, or other dangerous devices when a well-founded suspicion exists that the aeroplane may be the object of an act of unlawful interference. The operator shall also support the checklist with guidance on the appropriate course of action to be taken should a bomb or suspicious object be found, and provide information on the least-risk bomb location specific to that aeroplane type.

8.8 **Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods Doc 9481, N/928**

8.8.1 Operators shall ensure that all aeroplanes carry a copy of the “ICAO 9481 N/928” emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods to assist the crew to deal with any dangerous incident occurring on board the aircraft during flight.

8.8.2 Operators are required to provide a “Dangerous goods emergency response kit” for use aboard an aircraft and training crew member regarding its use. A typically dangerous goods emergency response kit contains:

- (a) large, good quality polyethylene bags;
- (b) bag ties; and
- (c) long rubber gloves

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9 RADIO WATCH

- 9.1 A simple instruction requiring a continuous watch on the appropriate frequency should normally suffice.

10 ROUTE GUIDE

- 10.1 The route guide provided in accordance with the provisions of the Civil Aviation Regulations should be a volume or series of volumes separate from the rest of the operations manual. Aerad, Jeppesen or similar publications approved by the Authority will normally meet the requirement provided that flight crew are given adequate advice on the route to be followed. An operator providing his own guide should ensure that it meets the needs of crew in every respect. If flights are to be made only on airways or advisory routes (ADRs), it will be sufficient to include instructions to that effect; otherwise routes regularly flown should be specified in detail, normally on prepared navigation flight plans. For other flights, routes should be specified in a commander's flight brief, a copy being retained at base. Operators are not required to lodge copies of standard Aerad or Jeppesen flight guides with the Authority.
- 10.2 Particular care should be taken to ensure that adequate information is provided on; search and rescue facilities, obstructions in the approach pattern, radio failure procedures, prohibited and danger areas, standard TMA routings, seasonal meteorological conditions, ATC communications and navigational facilities and procedures associated with the route along the route(s) and applicable procedures over heavily populated areas and areas of high traffic intensity, obstructions, physical layout, lighting, approach aids and arrival, departure holding and instrument approach procedures, and applicable operating minima. Only recognised instrument approach or let-down procedures in general use should normally be included in the flight guide. Exceptionally, a special "break cloud" procedure devised by the operator may be considered acceptable provided it has been approved by the appropriate airport authority. Proposals to use such special procedures, accompanied by the associated aerodrome operating minima, should be submitted for approval to the Authority.
- 10.3 Normally, the cancellation of IFR flight plans at night or in congested terminal areas should be prohibited, and instructions to this effect included in the manual. If an operator does not wish to impose a total prohibition, detailed instructions should be included in the manual setting out the minimum conditions that must be satisfied before cancellation of an IFR flight plan.
- 10.4 In order to facilitate effective monitoring of an instrument approach by members of the flight crew, operators of multi-crew aircraft should provide for use on the flight deck at least two copies of the instrument approach charts to be used.

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11 METEOROLOGICAL REPORTS FROM AIRCRAFT

- 11.1 Instructions on meteorological reports from aircraft in flight should be based on the information and guidance in the Mauritius AIP and/or any special requirements of foreign authorities.

12 MINIMUM SAFE ALTITUDES

- 12.1 The minimum safe altitude must be prescribed by the operator for each sector of each route to be flown including routes to “alternate” aerodromes. For this purpose “sector” means the intended track from one reporting or turning point to the next, until the aircraft starts the instrument approach procedure (or joins the traffic pattern) at the aerodrome to be used for landing. Except as provided in paragraph 12.2 below, these figures must be specified by the operator prior to flight in the appropriate volume of the manual, in a prepared navigational flight plan, or in the commander’s flight brief (see Chapter 5 paragraphs 11 and 12).
- 12.2 To meet the needs of the commander when he/she is obliged to depart from the planned or normal route, operators must include in the manual instructions from which the minimum flight altitude can readily be determined.
- 12.3 In specifying minimum flight altitude, operators must take account of any local regulations and limitations. The instructions should include maintenance of altitude awareness and the use of automated or flight crew altitude or flight crew call-out; the use of auto-pilot and auto-throttles in IMC; the clarification and acceptance of ATC clearances, particularly where terrain clearance is involved. Operators must specify limitations on high rate of descent near the surface.
- 12.4 The criteria upon which minimum altitudes are based will necessarily be determined to some extent by the track guidance facilities available to the commander, and by the extent to which commanders and operators are able in particular circumstances to accept the directions of radar controllers. The minimum acceptable standards will normally be as follows (see paragraph 12.5 of this chapter):
- 12.4.1 For general application: 1,500 feet above the highest terrain or obstacle within 20 n.m. of the intended track, with additional provision where necessary for terrain or obstacles within 10 degrees of intended track from the last known position.
- 12.4.2 For flight in controlled airspace where the track is well defined by two separate aids: 1,500 feet above the highest terrain or obstacle within 10 n.m. of the intended track.
- 12.4.3 For radar controlled flight within 25 n.m. of the aerodrome of departure or intended landing: 1,000 feet above the highest terrain or obstacle within 5 n.m. of the intended track. Commanders should be instructed to monitor all radar instructions by reference to other aids and be reminded that radar control does not relieve them of their responsibility to ensure adequate terrain clearance.

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12.4.4 If the specified minimum altitude for a sector is related only to terrain or obstacles within less than 20 n.m. of the intended track, special attention must be drawn to the fact in manuals and prepared navigational flight plans supplied to flight crew.

12.5 For flights within 20 nm. of terrain having an elevation exceeding 2,000 feet, operations manuals should provide for minimum altitude to be increased by at least the following amounts according to the wind speed at flight level:

Elevation of Terrain	Wind speed in knots			
	0-30	31-50	51-70	Over 70
2,000-8,000 ft	500 ft	1,000 ft	1,500 ft	2,000 ft
Above 8,000 ft	1,000 ft	1,500 ft	2,000 ft	2,500 ft

12.6 The manual should also include a reference to the effect of mountain waves and instruct commanders to take suitable precautions when such conditions are reported or forecast.

12.7 Minimum altitude should be related where necessary to the ability of the aircraft to comply with the Weight and Performance requirements. i.e. all engines operating, single engine failure for 2 engine aircraft, 1 or 2 engine failures for 3 or 4 engine aircraft.

12.8 If an operator wishes to use the minimum safe altitudes provided in a recognised Flight Guide (Aerads, Jeppesen or any charts that are approved by the Authority) he/she must first check that the basis of the publisher's calculations will give at least an equal standard to that required by the above paragraphs. It may be necessary to promulgate a correction in the manual so that the required standard is achieved.

13 AERODROME OPERATING MINIMA

13.1 The Operator is required to provide detailed instructions in the manual in respect of minimum weather conditions for take-off and landing – and, where necessary, for the en-route phase of the flight. The main object of these instructions is to help the commander decide whether or not he/she should take-off or commence or continue an approach. They need to be drafted and presented with care and with consideration for the pilot who will be required to observe them. There must be a clear statement that a

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commander may not attempt a take-off or approach to landing in weather below the stated minima, but that he/she retains the authority to apply higher minima if in his opinion, it is necessary to do so in order to secure the safety of his aircraft. When specifying Aerodrome Operating Minima, operators should not specify values lower than the appropriate values as specified by the State in which the aerodrome is located or the Aerad or Jeppesen or any other charts that are approved by the Authority. This will include the values of runway visual range for Category I, II or III operations. Operators are to submit their method of calculation of aerodrome operating minima including for Category I, II and III operations to the Authority. The calculations should take into account the aircraft type and handling characteristic, the crew experience and competence, the runway dimension and characteristic and adequacy of available visual and non-visual ground aids, aircraft equipment available for navigation during approach and landing, obstacle clearance for the approach, missed approach and landing and the means of obtaining meteorological reports. The minima specified in the Aerad or Jeppesen or approved charts will be accepted by the Authority. In addition, the operator must specify that:

- (a) an instrument approach and landing operation should not be authorised, when the aerodrome operating minima is below 800 m visibility unless RVR information is provided;
- (b) a CAT II and CAT III instrument approach and landing operations shall not be authorised unless RVR information is provided;
- (c) the commander shall not continue beyond the outer marker fix in the case of a precision approach (CAT I, CAT II or CAT III) or below 1000 ft (300m) above the aerodrome in case of non-precision approach, unless the reported visibility or controlling RVR is above the specified minimum; and
- (d) after passing the outer marker fix in the case of a precision approach (CAT I, CAT II, CAT III) or below 1000 ft (300 m) above the aerodrome in the case of a non-precision approach (NDB, VOR), the reported visibility or controlling RVR falls below the specified minimum, may continue to the decision height or minimum decision height as determined by the state of authority. In any case, an aeroplane shall not continue its approach-to-land at any aerodrome beyond a point at which the limits of the operating minima specified for that aerodrome would be infringed.

Note 1: Controlling RVR means the reported values of one or more RVR reporting locations (touchdown, midpoint and stop-end) used to determine whether operating minima are or not met. Where RVR is used, the controlling RVR is the touchdown RVR, unless otherwise specified by the state of authority.

Note 2: Approach and landing operations using instrument approach procedures are classified as follows:

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- (i). Non-precision approach and landing operations. An instrument approach and landing which utilises lateral guidance but does not utilise vertical guidance.
- (ii). Precision approach and landing operations. An instrument approach and landing using precision lateral and vertical guidance with minima as determined by the category of operations.
- (iii). Approach and landing operations with vertical guidance. An instrument approach and landing which utilises lateral and vertical guidance but does not meet the requirements established for precision approach and landing operations.

Lateral and vertical guidance refers to the guidance provided either by a ground-based navigation aid or computer generated navigation data.

Note 3:

- (i). The required visual reference for precision approach means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position in relation to the desired flight path. In Category III operations with a decision height the required visual reference is that specified for the particular procedure and operation.
- (ii). The required visual reference for a non-precision approach means that section of the visual aids or approach area which should have been in view for a sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path. In the case of a circling approach the required visual reference is the runway environment.

13.2 The instructions must comply with the relevant regulations and any mandatory operating minima which foreign countries may apply or authorise.

13.3 Except as provided in paragraph 13.5 of this chapter, specific minima must be prescribed by the operator – prior to flight – in the appropriate volume of the manual or in the commander's flight brief (see Chapter 5 paragraph 12). Limitations must cover take-off, every usable instrument approach procedure, and visual manoeuvring for landing at each aerodrome of intended landing, including alternates. The manual shall specify to the Commanders that he/she shall not continue the flight towards the aerodrome of intended landing, unless the latest available information indicates that at the expected time of arrival, landing can be effected at that aerodrome or at least at one destination alternate aerodrome, in compliance with the approved aerodrome operating minima.

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- 13.4 Minima and associated instructions must be related as necessary to particular types of aircraft, and must be tabulated or otherwise presented in a manner that will facilitate immediate reference on the flight deck.
- 13.5 Runways (or landing strips) and approach aids which are not to be used (e.g. because the runway is too short) must be clearly indicated. This may be done in the operator's weather minima tables or by a general instruction prohibiting the use of runways or aids which are not included in the tables.
- 13.6 For guidance of commanders who may be obliged in exceptional circumstances to land at aerodrome for which values have not specified, operators should include in the manual the data and instructions by means of which minima appropriate to the circumstances can readily be calculated. The data and instructions should be adequate to secure at least the normal operating standards observed by the operator and should be expressed as simply as possible. Note particularly that in these circumstances it may not be practicable for the commander to give the same detailed consideration to all the relevant factors which the operator is able to give when precalculating minima for inclusion in the manual or flight brief. It would therefore be expected that minima calculated in this way would usually be higher than those which would have been pre-calculated. The guidance given should be sufficient to enable the commander to determine all the values that would normally have been specified by the operator including, in particular, the minima appropriate to visual manoeuvring for landing. When an aircraft commander calculates the Aerodrome Operating Minima (AOM) in accordance with these criteria the calculations should be retained with other flight documentation.

13.7 Selection of Alternate Aerodrome

- 13.7.1 The alternate designated by the operator for each intended destination should normally be specified in the appropriate section of the manual or in the commander's flight brief. The selection of the destination alternates should be specified in the ATS and crew navigational flight plans; unless the duration of the flight and the meteorological conditions prevailing are such that there is reasonable certainty that, at the time of arrival at the aerodrome of intended landing, and for a reasonable period before and after such time, the approach and landing may be made in visual meteorological conditions or the aerodrome of intended landing is isolated and there is no alternate destination alternate aerodrome (see paragraph 6 of this chapter on Fuel Formula and Management).
- 13.7.2 Instructions should be included on the factors to be taken into account by commanders in the selection of alternates for particular flights.
- 13.7.3 Departures in conditions below the operator's landing minima must normally be prohibited by the operator unless there is a "return alternate" within a specified flying time (with one engine inoperative) or distance at which the forecast conditions are above the relevant minima for landing. The specified times should not be greater than the values in the following table:

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Aircraft	Specified time at “one engine out” speed
4 turbine	120 minutes
4 piston	120 minutes
3 turbine	120 minutes
3 piston	120 minutes
2 turbine	60 minutes
2 piston	60 minutes

13.7.4 Operators using Category II or Category III equipped aircraft should, at the flight planning stage consider the possibility of equipment malfunction, and ensure that the weather at the alternate is Category I or better.

13.8 Take-off Minima

13.8.1 Minima condition for take-off must be specified in terms of cloud ceiling and the runway visual range or visibility as appropriate. Full account should be taken of the factors in Fourteenth Schedule 46 of the Civil Aviation Regulations in particular the nature and position of runway lights and/or markings, the take-off run and emergency distance available, runway width and the directional controllability of the aircraft particularly in case of engine failure.

13.9 Special rules applicable to certain types of aircraft are discussed in paragraph 13.12.

13.10 Landing Minima

13.10.1 Decision height/altitude (DH, DA) or minimum descent height/altitude (MDH, MDA) and Runway Visual Range (RVR) and/or visibility must be specified for each runway or landing strip and approach aid to be used. Crew must be instructed not to commence or continue an approach to landing if the RVR or visibility falls below the specified values, and to initiate a missed approach at or above DH/DA or MDA/MDH if from that height the approach and landing cannot be completed entirely by visual reference to the ground (see paragraph 13.1 of this Chapter). The procedure should ensure that the aircraft conducting a precision approach crosses the threshold by a safe margin in a landing configuration and attitude.

13.10.2 In deciding the values to be specified, operators shall be guided by the factors in Fourteenth Schedule of the Civil Aviation Regulations. They must also take account of the relevant limitations notified by the appropriate aerodrome authority. Any altimeter system and the amount of sink following initiation of a missed approach must be allowed for. The minimum acceptable RVR is related to decision height and to visual approach and runway aids (see Appendix B).

13.10.3 Operators must specify increments to be applied to the normal specified values in the event of any unserviceability of engine, system or instrumentation which significantly affects the performance and/or handling of the aircraft. Operators should also consider

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specifying increments to be applied by commanders with limited experience. All approaches should be conducted according to a stabilized approach procedure.

13.11 **Minima for Visual Manoeuvring for Landing**

13.11.1 Minima for visual manoeuvring for landing (circling minima) must be established by the operator for each aerodrome to be used. These minima shall consist of a minimum circling height and a minimum visibility. They would apply, for example, where a pilot used a radio aid to position himself in sight of the aerodrome and then made a partial circuit (or other significant manoeuvre) to line-up for the approach and landing.

13.11.2 The minimum height for circling should be determined by reference to the relevant chart or AIP and account must be taken of obstacles and terrain within the appropriate radius of the centre of the aerodrome. The radius used must be indicated in the manual.

13.11.3 At some aerodromes, it will be necessary to restrict circling to a particular area of the circuit – e.g. “north of the extended centreline only” – because of major obstacles or high ground in the vicinity. Any such restriction must be clearly indicated in the lists of operating minima.

13.11.4 For a visual circuit of the aerodrome based on visual manoeuvring minima, a pilot should have continuous sight of ground features which will enable him to establish the position of the aircraft in relation to the aerodrome and subsequently to remain within the notified visual manoeuvring area.

13.12 **Special Rules For Certain Aircraft**

13.12.1 Certain classes of aircraft which are less well equipped and/or have a limited engine-out performance capability will need to operate to higher weather minima. Such minima shall be submitted to the Authority for approval.

13.13 **Aerodromes without Approach Aids**

13.13.1 As a general rule for public transport aircraft carrying passengers, flights to aerodrome without a radio or radar approach aid are prohibited. This should be brought specially to the attention of crew in operations manuals. In exceptional circumstances flights to such aerodromes may be specially permitted, and suitable aerodrome operating minima, together with associated operating procedures, will be agreed with the operator.

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14 EMERGENCY EVACUATION PROCEDURES

- 14.1 The manual should specify the procedures to be followed by the aircraft crew for the rapid evacuation of an aircraft, and the care of passengers, in the event of a forced landing, ditching or other emergency. Much of the material will necessarily be descriptive but it is essential that the basic drills to be followed by the various members of the aircraft crew should be summarised and tabulated. Particular attention should be paid to the following points:
- (a) The correct setting for pressurisation controls – e.g. spill valves, safety valves, discharge valves – prior to ditching;
 - (b) The proper use of emergency escape chutes;
 - (c) The method of fitting life-jackets to small children;
 - (d) The briefing of passengers and warning of impact;
 - (e) The seating of aircraft crew members adjacent to exits which drills require them to open;
 - (f) Crowd control (particularly in relation to aircraft capable of carrying large numbers of passengers) including procedures for initiating and maintaining the rapid egress of passengers in the event of an emergency evacuation;
 - (g) The need to move passengers away from the vicinity of the aircraft after evacuation.
- 14.2 Clear instructions should be given in the manual (supplemented by simple diagrams) on the location and, where it is not self-evident, the method of use of each item of emergency and survival equipment such as escape chutes and ropes, exits, fire extinguishers, oxygen masks and smoke protection equipment, emergency lights, torches, first aid kits, dinghies, life-jackets, survival packs, emergency radio, and flotation cots. It is especially important that differences between individual aircraft of the same type are clearly shown.
- 14.3 Special consideration should be given to the problems posed by the carriage of disabled passengers and the possible need to carry additional cabin crew. The aircraft commander should be made aware of the presence of severely disabled persons on board, and of the precautions taken to minimize the effect of their carriage on the conduct of an emergency evacuation of the aircraft.
- 14.4 Operators should ensure that there are satisfactory arrangements for cabin crew to be warned immediately of any emergency which might require the rapid evacuation of passengers from the aircraft.
- 14.5 To improve the chances of a successful evacuation, operators should back up the cabin crew briefing by paying special attention to the individual passenger notice cards, required by the Civil Aviation Regulations. It should be in colour, and pictorial, giving simply and unambiguously:

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- (a) instructions on the method of use of safety belts and harnesses;
- (b) instructions on the brace position to be adopted in the event of an emergency landing;
- (c) information as to where emergency exits are to be found and how to use them; and
- (d) information on where life-jackets, escape slides, life rafts, oxygen masks are to be found and how to use them.

15 ALLOWABLE DEFICIENCIES AND MINIMUM EQUIPMENT LISTS

- 15.1 The operator shall provide guidance to commanders on whether and on what conditions aircraft may be operated with defect not rectified. The minimum equipment list for all specific operations including any requirements relating to operations in All Weather Operations (CAT II and CAT III), RNP, MNPS, RVSM, ETOPS and CNS/ATM airspace and any other special operation requirements shall be submitted to the Authority for approval.
- 15.2 When the carriage of unserviceable equipment results in a deviation from the normal drills, satisfactory alternative drills must be included in the manual. It is important, when items such as spoilers or thrust reversers are listed as allowable deficiencies that the operator not only publishes alternative drills, but also checks with the Authority on the validity of relevant performance data.

16 USE AND CHECKING OF ALTIMETERS

- 16.1 Operators should provide detailed instructions in their operations manuals about altimeter setting procedures and in particular, about their policy regarding the use of QFE and QNH.
- 16.2 The instructions should include pre-flight serviceability checks, the settings to be used on each altimeter for each phase of flight, and the monitoring and crosschecking duties of flight crew during climb and descent and whenever a setting is changed.
- 16.3 In order to facilitate effective monitoring during the approach and landing phase in aircraft operated by two pilots, the Authority requires that both pilots' altimeters be set to the same datum unless otherwise approved by the Authority.
- 16.4 Guidance material on the use of altimeters is contained at Appendix D.

17 REPORTING OF ACCIDENTS, INCIDENTS AND OCCURRENCES

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- 17.1 Operators, commanders and maintenance organisations of Mauritius registered aircraft are required to report any accidents, incidents or occurrences which endanger, or unless corrected would have endangered the flight crew and passengers and aircraft (such as unlawful interference, air rage etc). The written report is to be submitted by the quickest means available, within 96 hours to the Authority. The manual should remind personnel of their responsibilities in this regard and state the company procedure for dealing with such reports.
- 17.2 Commanders are to report any hazardous conditions, other than those associated with meteorological conditions, to the appropriate aeronautical station as soon as possible. The reports so rendered shall give such details as may be pertinent to the safety of other aircraft.
- 17.3 The commander shall be responsible for reporting the all known or suspected defect in the aircraft to the operator at the termination of the flight in accordance with Regulation 128.

18 DANGEROUS GOODS

- 18.1 The operations manual should indicate whether or not a general permission for the carriage of dangerous goods is held and what conditions apply to that permission. Operators who do carry dangerous good should also include in their operations manual information regarding the means of identifying dangerous goods, their manner of loading and the responsibilities of crew members concerning such goods. The conditions for the carriage of dangerous goods are covered in Chapter 3, paragraph 3.
- 18.2 Operators who do not seek permission to carry dangerous goods must prohibit their carriage by an entry in the operations manual, and give guidance to staff and agents concerning which goods may not be carried.

19 GROUND HANDLING¹

- 19.1 Operators are required to provide ground handling instructions, procedures and arrangements so that all ground handling despatch tasks are carried out in a standard manner.
- 19.2 In addition, instructions shall be provided to its staff on the requirement to monitor the performance of the contracted handling agents to ensure safe conduct of all tasks.

20 EXTENDED RANGE TWIN ENGINE OPERATIONS

- 20.1 An operator shall not operate ETOPS flights without approval from the Authority.
- 20.2 The operator shall provide a policy and procedures on the operations of ETOPS flights covering at least the following:

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- (a) The operating crew shall not conduct operations beyond the threshold time unless approved. All ETOPS routes are specifically approved by the authority. A reference of all approved routes have to be provided for crews' reference;

¹ Ground handling includes services that are necessary for an aircraft's arrival at and departure from, an airport, other than air traffic services.

- (b) The required enroute alternates for ETOPS that are selected will be specified in the ATC flight plans in accordance with the ETOPS diversion time approved and engine failure procedures and the nomination and utilization of the diversion aerodromes;
- (c) An aerodrome may not be selected as an ETOPS enroute alternate aerodrome unless the appropriate NOTAM and weather reports or forecasts, or any combination thereof, indicate that during the period commencing one hour before and ending one hour after the expected time of arrival at the aerodrome, the aerodrome is available and weather conditions will be at or above the planning minima prescribed and in accordance with the operator's ETOPS approval;
- (d) Maintenance and MEL requirement for ETOPS flights;
- (e) The operating staff have to be appropriately trained.

21 SPECIAL OPERATIONS

- 21.1 Operators shall not operate in MNPS; RVSM and RNP airspace without the approval of the Authority. If approved, the operator is to provide policies or guidance for crew to operate into such designated airspace.
- 21.2 The operations in MNPS; RVSM and RNP airspace will be in accordance with the procedures and restrictions specified by the appropriate Authority.
- 21.3 The operator is required to submit to the Authority for approval the policies, operational and training manual of any special operations (for example CNS/ATM, Polar routes).
- 21.4 Further to the Regulation 54 and the Sixth Schedule of the Civil Aviation Regulations and paragraph 21.1 above and subject to paragraph 21.5 below, to qualify for reduced vertical separation minimum (RVSM) approval, an aeroplane shall be equipped with the following:
 - (a) Two independent altitude measurement systems;
 - (b) An altitude alerting system and the threshold for the alert shall not exceed $\pm 90\text{m}$ (300ft);

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- (c) An automatic altitude control system; and
 - (d) A secondary surveillance radar (SSR) transponder with altitude reporting system that can be connected to the altitude measurement system in use for altitude keeping.
- 21.5 For grant of RVSM approval by the Authority, the following conditions shall be satisfied:
- 21.5.1 The operator shall institute appropriate procedures in respect of continued airworthiness (maintenance and repair) practices and programmes;
 - 21.5.2 The operator shall institute appropriate flight crew procedures for operations in RVSM airspace;
 - 21.5.3 In respect of groups of aeroplanes that are nominally of identical design and build with respect to all details that could influence the accuracy of height-keeping performance, the height-keeping performance capability shall be such that the total vertical error (TVE) for the group of aeroplanes shall have a mean no greater than 25m (80ft) in magnitude and shall have a standard deviation no greater than $28 - 0.013z^2$ for $0 < z < 25$ when z is the magnitude of the mean TVE in metres, or $92 - 0.004z^2$ for $0 < z < 80$ where z is in feet. In addition, the components of TVE shall have the following characteristics:
 - (a) the mean altimetry error (ASE) of the group shall not exceed 25m (80ft) in magnitude;
 - (b) the sum of the absolute value of the mean ASE and of the three standard deviations of ASE shall not exceed 75m (245ft); and
 - (c) the differences between cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0m, with a standard deviation no greater than 13.3m (43.7ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.
 - 21.5.4 In respect of aeroplanes for which the characteristics of the airframe and altimetry system fit are unique and so cannot be classified as belonging to a group of aeroplanes encompassed by paragraph 21.5.3, the height-keeping performance capability shall be such that the components of the TVE of the aeroplane have the following characteristics:
 - (a) the (ASE) of the aeroplane shall not exceed 60m (200ft) in magnitude under all flight conditions; and
 - (b) the differences between cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0m, with a standard deviation no greater than 13,3m (43.7ft), and in addition, the decrease in the

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frequency of differences with increasing difference magnitude shall be at least exponential.

21.5.5 The operator shall ensure that the aeroplane is so equipped to ensure safe completion of its intended flight plan in the event of failure of one item of its equipment at any stage of the flight.

Note 1: Refer to ICAO Doc 9574 for further guidance.

Note 2: Altimetry system error (ASE) is the difference between the altitude indicated by the altimeter display, assuming a correct altimeter barometric setting, and the pressure altitude corresponding to the undisturbed ambient pressure.

Note 3: Total vertical error (TVE) the vertical geometric difference between the actual pressure altitude flown by an aircraft and its assigned pressure altitude (flight level).

Note 4: An RVSM approval is valid globally on the understanding that any operating procedures specific to a given region will be stated in the operations manual or appropriate crew guidance.

22 SECURITY PROGRAMME

22.1 The operator shall establish and implement a written security programme and shall ensure that such a programme meets the national civil aviation security programmes of all States to which it operates.

23 FLIGHT DECK SECURITY

23.1 From 1 November 2003, the operator shall not operate a passenger aeroplane with a maximum certificated take-off mass in excess of 45,500 kg or with a passenger seating capacity greater than 60 unless it is equipped with an approved flight deck door that is designed to resist penetration by small arms fire and grenade shrapnel, and to resist forcible intrusion by unauthorised persons.

23.2 In all aeroplanes equipped with a flight deck door required by paragraph 21.1, means shall be provided for pilots to monitor from either pilot's station the entire door area outside the flight deck to identify persons requesting entry to the flight deck and to detect suspicious behaviour or potential threat.

23.3 It is recommended that all other aeroplanes operated by the operator be installed with an approved flight deck door, where practicable, that is designed to resist penetration by small arms fire and grenade shrapnel, and to resist forcible intrusion by unauthorised persons.

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- 23.4 In all aeroplanes equipped with a flight deck door recommended by paragraph 21.3, means should be provided for pilots to monitor from either pilot's station the entire door area outside the flight deck to identify persons requesting entry to the flight deck and to detect suspicious behaviour or potential threat.
- 23.5 If installed, the flight deck door shall be capable of being locked or unlocked from either pilot's station. Means shall be provided by which cabin crew can discreetly notify the flight crew in the event of suspicious activity or security breaches in the cabin.
- 23.6 The Commander shall ensure that the flight deck door is closed from the time all external doors are closed following embarkation until any such door is opened for disembarkation, except when necessary to permit access and egress by authorised persons.
- 23.7 The flight deck door shall not be opened unless the person requesting access has been identified as a person authorised to access the flight deck.

24 **ADMISSION TO THE FLIGHT DECK**

- 24.1 The Commander shall ensure that no person, other than a flight crew member assigned to a flight, is admitted to, or carried in, the flight deck unless the person is:
- (a) A crew member in the performance of his or her duties;
 - (b) An officer of the Authority responsible for certification, licensing or inspection;
 - (c) A person required to be in the flight deck compartment for technical, operational, training, or official flight deck familiarisation reasons formally authorised in accordance with the operator's Operations Manual; and
 - (d) Any other persons or classes of persons as approved by the Authority to be admitted to the flight deck. The list of such persons or classes of persons shall be included in the Operations Manual.
- 24.2 The Commander shall ensure that:
- (a) In the interest of safety, admission into the flight deck does not cause distraction and/or interfere with the flight's operation; and
 - (b) All persons carried on the flight deck are made familiar with the relevant safety and security procedures.
- 24.3 The final decision regarding the admission to the flight deck shall be the responsibility of the Commander.

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25 CONTROL OF INFECTIOUS DISEASES²

- 25.1 Operators must have written procedures and guidelines available to all operating staff for the handling of any outbreak of infectious diseases at destination(s) to which they operate.
- 25.2 Operators shall ensure that all operating staff are familiar with such procedures and guidelines related to the handling of outbreak of infectious diseases.

26 ELECTRONIC NAVIGATION DATA MANAGEMENT

- 26.1 The operator shall not employ electronic navigation data products that have been processed for application in the air and on the ground unless approval has been granted to the operator's procedures for ensuring that the process applied and the products delivered have met acceptable standards of integrity, and that the products are compatible with the intended function of the equipment that will use them. The operator must ensure that both the process and the products are continuously monitored to meet with the standards of integrity as provided in RTCA DO-200A / EUROCAE ED-76 and RTCA DO201A / EUROCAE ED-77.
- 26.2 The operator shall implement procedures that ensure the timely distribution and insertion of current and unaltered electronic navigation data to all aircraft that require it.

27 AEROPLANE PERFORMANCE OPERATING LIMITATION (SINGLE-ENGINE AEROPLANES)

- 27.1 A single-engine aeroplane shall only be operated in conditions of weather and light, and over such routes and diversions therefrom, that permit a safe forced landing to be executed in the event of engine failure² As defined by World Health Organisation.
- 27.2 In approving operations by single-engine turbine-powered aeroplanes at night and/or in IMC, the operator shall satisfy the Authority that the airworthiness certification of the aeroplane is appropriate and that the overall level of safety is ensured by:
- (a) the reliability of the turbine engine;
 - (b) the operator's maintenance procedures, operating practices, flight dispatch and crew training programmes;
 - (c) equipment and other requirements provided in accordance with Appendix M; and

² *As defined by World Health Organisation.*

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- (d) automatic engine trend monitoring system.

Note: Target level of safety (TLS) – A generic term representing the level of risk which is considered acceptable in particular circumstances.

28 AUTHORITY TO TAXY AN AEROPLANE

28.1 The operator shall not permit an aeroplane in his charge to be taxied on the movement area of an aerodrome by a person other than a flight crew member, unless that person seated at the controls:

- (a) Has been duly authorised by the operator or its designated agent and is competent to taxy the aeroplane and to use the radio telephone;
- (b) Has received instruction and continuation training in respect of aerodrome layout, routes, signs, marking, lights, air traffic control signals and instructions, phraseology and procedures, and is able to conform to the operational standards required for the safe aeroplane movements at the aerodrome; and
- (c) Where applicable, has received permission from the aerodrome operator to taxy the aeroplane at the aerodrome.

29 USE OF AIRBORNE COLLISION AVOIDANCE SYSTEM (ACAS)*

29.1 The operator shall establish procedures to ensure that:

- (a) When ACAS is installed and serviceable, it shall be used in flight in a mode that enables Resolution Advisories (RA) to be produced unless to do so would not be appropriate for conditions existing at the time.
- (b) When undue proximity to another aircraft (RA) is detected by ACAS, the pilots, unless doing so would jeopardise the safety of the aeroplane, shall follow the RA even if there is a conflict between the RA and an air traffic control (ATC) instructions to manoeuvre.
- (c) Nothing in subparagraph 29.1 (b) shall prevent the commander from exercising his best judgement and full authority in the choice of action to resolve a traffic conflict or avert a potential collision.

** Refer to procedure in ICAO Doc 8168 PANS OPS Volume I*

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CHAPTER 3

AIRCRAFT LOADING

1 GENERAL

- 1.1 Loading instructions should be provided to traffic staff, handling agents, cabin and flight crew, the complete detailed guidance on all aspects of the loading, weight and balance of aircraft, including in particular instructions on:
 - 1.1.1 Controlling and promulgating the basic APS (Aircraft Prepared for Service) weights and indices;
 - 1.1.2 Regulating the carriage and stowage of baggage and freight in passenger compartments, including particular instructions concerning the amount of hand baggage allowed and how it is to be stowed. It is essential that emergency exits, aisles and dinghy launching stations, are kept clear during take-off and landing. (Operators should also take steps to ensure that their traffic staff and agents comply with these instructions);
 - 1.1.3 Carriage of dangerous goods;
 - 1.1.4 Limitations on floor loading, use of weight spreading devices and positioning and securing of ballast;
 - 1.1.5 Checking that items of freight or baggage required to be in particular compartments or holds are properly stowed. The person responsible for the trim of the aircraft must give written instructions to the person responsible for the actual loading;
 - 1.1.6 Advising the aircraft commander and cabin crew of essential seating restrictions;
 - 1.1.7 The effect on RTOW of such factors as the maximum zero fuel weight, landing weight restrictions at planned destination, take-off and climb performance requirements at the departure aerodrome and enroute performance requirements;
 - 1.1.8 Relevant C of A or flight manual limitations;
 - 1.1.9 Fuel loading limitations;
 - 1.1.10 Where appropriate, any special loading limitations for ferrying aircraft with one engine inoperative, C of A tests etc;
 - 1.1.11 Where applicable the use of standard weights in accordance with the Civil Aviation Regulations, or any national weights given in exemptions granted to the operator by the Authority.

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- 1.2 Freight loading instructions should include the following additional details:
 - 1.2.1 Diagram of cabin bays and cargo holds, with dimensions, to facilitate the pre-planning of cargo distribution;
 - 1.2.2 Particulars of the strength and usable directions of all lashing points and/or rings and details of the spacing between lashing points;
 - 1.2.3 Information on the types and working strengths of lashings provided, and directions for stowage when not in use;
 - 1.2.4 Instructions concerning special cases such as the loading of stretchers, carriage of livestock, etc;
 - 1.2.5 Where appropriate, instructions on the handling, loading and securing of pallets or containers.
- 1.3 The practice of letting a load/trim sheet serve as loading instructions is not acceptable, and the use of a trim slide rule does not dispense with the requirement to complete a load sheet.
- 1.4 It is a statutory requirement that the position of the laden centre of gravity should be given on the load sheet. For this purpose, a trim sheet may be regarded as part of the load sheet even though it may be a separate document. It is essential that the complete document includes particulars of the manner in which the load is distributed, and special attention should be paid to the wording of the loading certificate. The mandatory requirement may be met by establishing that the C of G lies within the permissible limits and it may not be essential to determine its precise position unless it needs to be known in connection with aircraft handling or other factors. The load sheet should bear the reference of the APS form used and, if average weights have been used, an endorsement to that effect.
- 1.5 Where a 'loading plan' method is used, operators should show in their loading instructions the basic assumptions upon which the plan is formulated and should specify C of G limits more stringent than those permissible under the C of A. They should also confirm in the loading instructions that loading in accordance with the 'plan' will ensure that the laden C of G always falls within the restricted limits. If this is done, a simple statement on the load sheet that the laden C of G is between X and Y (i.e. the operator's more stringent limits) can be accepted.
- 1.6 Traffic staff and handling agents (including agents at overseas aerodromes) should be provided with:
 - 1.6.1 Loading instructions;
 - 1.6.2 Current APS forms for all types, marks and variants of aircraft being used;
 - 1.6.3 Details of the RTOW and fuel load for each flight.

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1.7 Where traffic staff and handling agents are responsible for calculating the RTOW, operators should ensure that they have sufficient knowledge to do so and are provided with all relevant information.

2 LOAD SHEET CONTENTS

2.1 The load sheet, together with the APS form, should account for all items of the laden weight. Although they may not always be specified individually, the following are examples of items to be covered:

2.1.1 Fuel, water methanol, oil, hydraulic fluid, drinking water, toilet water, de-icing fluid;

2.1.2 Passenger seats, children's cots, cabin floor covering and removable bulkheads;

2.1.3 Galley equipment including urns, hot cups, etc;

2.1.4 Food and beverages to be consumed in flight;

2.1.5 Bar stocks including the weight of the box or other container;

2.1.6 Navigation bag or aircraft library and navigational equipment;

2.1.7 Passengers' hold baggage;

2.1.8 Passengers' cabin baggage, unless this is accounted for elsewhere;

2.1.9 Flight spares and tools, spare hydraulic or de-icing fluid, etc;

2.1.10 Freight;

2.1.11 Aircraft crew baggage;

2.1.12 Dinghies, lifevests (including demonstration lifevests), flotation cots, survival packs, blankets, pillows and similar equipment;

2.1.13 Weight spreaders, lashing, ballast, etc;

2.1.14 All items of removable equipment and removable radio carried on the particular flight;

2.1.15 Food and necessary equipment when livestock is carried.

2.2 Load sheets are required to be annotated to show whether actual, standard, or approved national weights of passengers and their baggage have been used.

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3 CARRIAGE OF DANGEROUS GOODS

- 3.1 The Regulation 65 of the Civil Aviation Regulations states that dangerous goods may not be carried on Mauritius registered aircraft except with the written permission of the Authority. Such goods must be carried in accordance with the latest edition of Annex 18 to the Convention on International Civil Aviation relating to the Safe Transport of Dangerous Goods by Air. Dangerous goods are defined in the Civil Aviation Regulations and classified in the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air. These Instructions also state in detail the operator's responsibilities.
- 3.2 Application for a general permission to carry dangerous goods should be made in writing to the Authority at least 7 working days in advance. Applicants will need to give full details of their procedures for accepting, handling, storage, loading, etc; and for staff training before the intended date of carriage.
- 3.3 Some dangerous goods are not subject to the requirements of the ICAO Technical Instructions. These include items of aircraft equipment and certain items carried by passengers. Operators have a responsibility to inform passengers of those dangerous goods they may not carry. Goods that passengers may carry include medicinal and toiletry articles, duty free purchases, personal smoking materials (within certain limitations) and up to 5 kg of small arms ammunitions for sporting weapon. Personal items removed from passengers which are considered lethal, such as handguns, knives, etc, and which the operator accepts for carriage, should be stowed in a place that is inaccessible to any person during flight.

4 CARRIAGE OF MUNITIONS OF WAR

- 4.1 The carriage of munitions of war in Mauritius registered aircraft, wherever they may be, is prohibited by the Civil Aviation Regulations, and this prohibition should be repeated in the loading instructions contained in the operations manual.
- 4.2 Munitions of war are defined as weapons, ammunition, articles materials or devices as are intended, adapted or designed for use in warfare or against the person.
- 4.3 An application for an exemption from the Civil Aviation Regulations to enable munitions of war to be carried should be made to the Authority. This should be made in writing, or by fax at least 7 working days before it is required, stating precisely what munitions are involved. Where munitions of war are also dangerous goods (e.g. ammunition) a permission to carry dangerous goods will also be required.

5 CARRIAGE OF LIVESTOCK

- 5.1 The carriage of livestock poses special problems particularly with regard to the determination of weights and to the control and restraint of animals such as horses, cattle, etc.
- 5.2 It will normally be acceptable for the weight of a consignment of livestock to be derived from the difference between the laden and unladen weight of the vehicle in

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which it is delivered to the aircraft, based on the evidence of an appropriate weight-bridge certificate. The average weight per animal can then be calculated for trim purposes and must be indicated on the load sheet.

- 5.3 If horses are to be carried, application may be made to the Authority for permission to use authorised notional weights. When national weights are used, the load sheet must be annotated accordingly.
- 5.4 Loading instructions should include details of the weight dimensions, construction, method of attachment and required restraints for horse boxes or animal pens used. Guidance should be given on:
 - 5.4.1 The checks to be carried out before loading of horse boxes or animal pens – e.g. on general condition and serviceability of fittings and lashing points;
 - 5.4.2 Quantities of food and water to be carried based on the length of the flight and the number of animals carried;
 - 5.4.3 Number and type of food and water containers required;
 - 5.4.4 Method of stowage of items of loose equipment such as food and water containers and horse accoutrements;
 - 5.4.5 Method of loading horse boxes into aircraft and of tethering the horses inside them.
- 5.5 Operators will be expected to comply with the standards and practices specified in the current IATA Live Animals Regulations, which give guidance on an extensive range of subjects including the labeling and marking of live-animal containers, animal health and hygiene, feeding, loading and sedation. They also give comprehensive details of many types of containers, together with a list of the animals for which they may be used.
- 5.6 When horses or other large or potentially dangerous animals are to be carried, operators should ensure that the sedative drugs and ammunition for the captive bolt humane killer are appropriate to the animal and that at least one groom or attendant has been trained in their use.
- 5.7 The minimum number of attendants to be carried in particular circumstances, should be determined by the operator, in consultation with the consignor, and specified in the operator's instructions to aircraft commanders and to the staff responsible for loading arrangements. When carrying horses one groom for each animal carried 'line ahead' and one groom for every two horses loaded side by side will normally be acceptable.
- 5.8 Where attendants are carried, it is essential that they should be able to communicate readily with the aircraft commander during the flight, and that they are briefed before the flight on procedures to be followed in case of emergency.

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- 5.9 If horses are to be carried and the attendants wish to stand with their animals for take-off and landing, the operator will need to seek exemption from the statutory requirement for passengers and crew to be secured in their seats. Application for such exemption may be made to the Authority.
- 5.10 Operators should provide clear instructions to their staff on the need, after a flight carrying animals, to check the aircraft carefully for damage to the structure, fittings, wiring, etc; and for any adverse effects resulting from urination or the high level of humidity frequently produced by animals in flight.

6 HELICOPTER LOADING

- 6.1 It will be necessary for helicopter operators to provide loading instructions suited to the special capabilities, limitations and type of operations of helicopters. In preparing these instructions, operators should remember that in many cases, they will have to be read and implemented by personnel with little or no aviation experience, such as oil rig crew and contractors' staff. They should therefore be clear and concise and avoid the use of aviation jargon wherever possible.

7 AIRCRAFT LOADING

- 7.1 Operators are responsible for the safe despatch of their aircraft following cargo and passenger loading. In particular, the operator shall have written procedures for handling agents to ensure that any incident or damage to the aircraft during loading must be reported and assessed for airworthiness significance prior to flight.

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CHAPTER 4

TRAINING AND TESTING

- 1 GENERAL REQUIREMENTS FOR AIRCRAFT CREW TRAINING AND TESTING**
- 1.1 The statutory requirements relating to the training and periodical testing of aircraft crew are specified in the Civil Aviation Regulations, regulation 29 and the Twelfth Schedule. Training and testing are to incorporate Human Factors and Performance, and Crew Resource Management requirements. The primary purpose of this chapter is to indicate the nature of the arrangements considered necessary to secure an adequate standard of compliance with the statutory provisions.
- 1.2 Supervision of training and testing**
- 1.2.1 A suitably qualified person should be designated to take general charge of arrangements for training and testing. His authority and responsibilities should be clearly defined.
- 1.3 Training staff and examiners – General**
- 1.3.1 The operator will need to appoint examiners and instructors to conduct the periodical tests and to give practical training as necessary. Details of each examiner or instructor including his curriculum vitae should be sent to the Authority for approval prior to the appointment of the candidate.
- 1.3.2 Examiners and instructors should be experienced and qualified for the work, and operators will be expected to arrange, where necessary, training in teaching and examining techniques.
- 1.4 Training Staff and Examiners - Flight Crew**
- 1.4.1 The following tests of pilots' competence and, where applicable, flight engineers' competence are administered by examiners authorised by the Authority and normally employed by the operator:
- (a) initial type rating tests - to qualify for type endorsement on a pilot's or flight engineer's licence;
 - (b) tests for the renewal of a type rating (Certificate of Test);
 - (c) tests to extend the validity and initial issue of an instrument rating.

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- 1.4.2 The above tests are the standards required to maintain the aircraft and instrument ratings of a licence. For the further training of pilots and flight engineers and to carry out the tests on behalf of the operator required by the Twelfth Schedule to the Civil Aviation Regulations, the examiner is not required to be authorised by the Authority (except as required in paragraph 1.8). In practice, however, the test for a type rating 'Certificate of Test' is normally integrated with the operator's Bi-annual type competence check ('LPC/OPC') and the two are administered simultaneously by an examiner on the operator's staff who is authorised as a type rating examiner by the Authority. If the instrument rating test is combined with one of the Bi-annual Base Checks, the examiner must be an instrument rating examiner authorised by the Authority.
- 1.4.3 The operator shall only use Examiners authorised by the Authority for aircraft type and instrument rating tests.
- 1.4.4 A pilot examiner or instructor must be qualified under the provisions of the Civil Aviation Regulations, regulation 32 to act as commander of the aircraft, and his ability to perform the functions of a commander while occupying the co-pilot's seat should be checked by the operator and recorded.
- 1.4.5 Applications for appointments as an authorised examiner must be sponsored by the operator and submitted to the Authority.
- 1.5 Supervision of examiners**
- 1.5.1 The conduct of tests by operators' examiners, and of aircraft crew training will be periodically observed by Authorised Officers.
- 1.6 Small operators**
- 1.6.1 The arrangements discussed in the foregoing paragraphs may not be practicable in the case of a small organisation operating one or two aircraft and employing a small number of aircraft crew. For example, the periodical testing of the authorised flight examiner himself. In such cases special arrangements may be agreed with the Authority.
- 1.7 Multi-type operation**
- 1.7.1 As a general rule (except on simple types) pilots and flight engineers should be limited to operating one aircraft type or, where there are significant differences between variants of a type, to one variant. Exceptions may be made for pilots and flight engineers employed as instructors or examiners.
- 1.8 Use and approval of flight simulators and trainers**

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1.8.1 Provision is made in the Civil Aviation Regulations for use of apparatus such as flight simulators, flight trainers and fuselage 'mock-ups' for certain periodical tests. These devices must be individually approved by the Authority and may be used only under the supervision of a person approved for the purpose.

1.9 Records of training and tests

1.9.1 Records must be maintained showing a trainee's progress through each stage of training. These should indicate, where applicable, the number of times each exercise in base and line training was covered, and should include information about the results of tests. Records should incorporate certificates indicating the competence of examinees to perform the duties in respect of which they have been tested.

1.9.2 Operators must keep records for all aircraft crew members showing the dates on which tests, ratings, medical certificates, licences, etc. are due for renewal. There should also be an effective system to guard against aircraft crew being rostered for duty when checks, etc. are overdue, and for verifying that licences, etc. have been renewed at the appropriate time. The periods of validity of the various tests are:

(a) type rating Certificate of Test (paragraph 1.4.1(b), Bi-annual Base Checks (paragraphs 3.1.2, 3.3, 3.4, 4.3, 4.4 and 5.1.2) are normally valid for a period of 6 months; additionally, if the same test has been passed on two occasions, separated by an interval of not less than 4 months, rating is valid for 12 consecutive months from the first of the two tests. In addition, there must be three Base Checks within any 13 consecutive months period.

(b) instrument ratings test (paragraphs 1.4.1(c), 3.6 and 4.5, line checks (paragraphs 3.1.1, 3.2, 4.2 and 5.1.1) and emergency/survival checks as detailed in Chapter 6 are valid for 12 months.

2 TRAINING MANUAL

2.1 It is a statutory requirement in the Civil Aviation Regulation , regulation 11 that a “training manual shall contain all such information and instructions as may be necessary to enable a person appointed by the operator to give or to supervise the training, experience, practice and periodical tests to perform his duties”.

2.2 Applicants for Air Operator Certificates are required to prepare a training manual and to submit a copy to the Authority, together with their application. The manual will be regarded by the Authority as a primary indication of the standards of training and testing likely to be achieved. It should give formal expression to the operator's training policy and requirements, together with adequate guidance to instructors and examiners.

2.3 Each copy of a manual should normally bear a serial number, and a list of holders should be maintained by the person responsible for issuing amendments. Where this

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system is not used, an operator should have satisfactory alternative arrangements for controlling the issue and amendment of manuals. Each volume of a manual should be numbered and bear a title and list of contents giving a clear indication of its scope. The title of the person or department responsible for the issue of the manual should also be indicated. At the front of each volume there should be an amendment page to indicate amendment number, date of incorporation, signature or initials of persons amending, and page(s) or paragraph(s) affected. Amended pages should be dated. The numbering of pages, sections, paragraphs, etc should be orderly and systematic so as to facilitate immediate identification of any part of the subject matter. The standard of printing, duplication, binding, section dividers, indexing of sections, etc should be sufficient to enable the document to be read without difficulty and to ensure that it remains intact and legible during normal use.

- 2.4 The amendment of a manual in manuscript will not be acceptable. Changes or additions, however slight they may be, should normally be incorporated by the issue of a fresh or additional page on which the amendment material is clearly indicated.
- 2.5 Although the training manual is a part of the operations manual it should be a separate volume addressed primarily to training staff, each of whom should normally have a personal copy. The form that the manual takes will vary considerably according to the size and complexity of the operator's organisation and the aircraft he/she uses, and its adequacy will be assessed solely on the basis of its suitability for the operator's particular needs and circumstances.
- 2.6 The following matters should be covered in the manual normally in the volume addressed to training staff:
 - 2.6.1 Requirements in respect of the qualifications, training and experience of training staff;
 - 2.6.2 A comprehensive statement of the duties and responsibilities of all training staff, which should include their names, the type of training and/or testing which they may conduct, and the types of aircraft used by the operator;
 - 2.6.3 Minimum standards of experience and of initial and periodical training to be met by all aircraft crew for each type of aircraft used by the operator;
 - 2.6.4 Detailed syllabi and specimen record forms for all training and testing;
 - 2.6.5 Arrangements for administering and recording the periodical tests of all aircraft crew;
 - 2.6.6 Methods of simulating instrument flight conditions;
 - 2.6.7 Methods of simulating engine failure;
 - 2.6.8 Procedures for touch-and-go or stop-and-go landings, including flap settings, minimum runway lengths, brake cooling requirements and handling techniques;
 - 2.6.9 Limitations on training and testing in the course of flights for the purpose of public transport. Note particularly that the simulation of instrument flight conditions and of

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emergencies affecting the flight characteristics of the aircraft is prohibited in the course of flights for the public transport of passengers;

- 2.6.10 Instructions covering retesting and retraining after unsatisfactory performance or periods off flying due to illness or other causes;
- 2.6.11 The use of flight simulators; and
- 2.6.12 The assessment and training of crew in the use of Crew Resource Management and Human Factors.

3 PERIODICAL TESTS - AEROPLANE PILOTS

3.1 General nature of requirements

- 3.1.1 The effect of the statutory requirement is to require operators to subject their pilots to two separate but complementary tests:
- 3.1.2 A test of competence to perform his duties in the course of normal operations, including use of the instruments and equipment provided. Maximum period of validity for this test (discussed below as the LINE CHECK) is stated in paragraph 1.9.2(b). The test should be carried out in flight.
- 3.1.3 A test of competence to perform his duties in instrument flight conditions while executing emergency manoeuvres and procedures, including use of the instruments and equipment provided. The period of validity for this test (discussed below as the BASE CHECK) is stated in paragraph 1.9.2(a). It may be conducted in flight in actual or simulated instrument flight conditions or in a flight simulator specifically approved for this purpose.

3.2 Line checks - all pilots

- 3.2.1 The annual line check is not intended to determine competence on any particular route. The requirement is for a test of ability to perform satisfactorily a complete line operation from start to finish, including pre-flight and post-flight procedures and use of the equipment provided. The route chosen should be such as to give adequate representation of the scope of a pilot's normal operations. The line check is considered a particularly important factor in the development, maintenance and refinement of high operating standards, and can provide the operator with a valuable indication of the efficacy of his training policy and methods.
- 3.2.2 The operator has a statutory obligation to check that his pilots are competent to perform their duties. If it is company policy that both pilots may carry out either the handling or the non-handling duties, both commanders and co-pilots should be checked in both roles.

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3.2.3 In addition to the above duties, a commander should also be assessed on his ability to “manage” the operation generally and take correct command decisions. This is most readily achieved if the examiner occupies a jump seat, which will also enable him to sign certificates for both the commander and co-pilot.

3.2.4 When line checks are carried out on sectors which terminate away from base, the operator should allow for the possibility that on subsequent sectors the examiner may have to act as substitute for either captain or co-pilot. The examiner should therefore be fully qualified to operate at any crew station over which he/she acts in an examining capacity.

3.3 Base checks - pilots-in-command

3.3.1 The Bi-annual Base Check provides an opportunity for the practice of emergency drills and procedures which rarely arise in normal operations, and can generally be regarded as continuation training. The statutory requirement, however, is that pilots shall be tested, and their continued competence must be verified and certified.

3.3.2 The scope of the practice and check may be divided into three main categories, as follows:

- (a) emergency manoeuvres in instrument flight conditions, including:
 - (i) take-off with engine failure between V1 and V2 or as soon as safety considerations permit. When the check is completed in an aircraft, instrument flight conditions should be simulated as soon as possible after becoming airborne;
 - (ii) instrument approach to decision height with one engine inoperative;
 - (iii) 'go around' on instruments from decision height with one or more engines inoperative;
 - (iv) landing with one or more engines inoperative;
 - (v) where appropriate to a particular aircraft type, approach and landing with flying control systems and/or flight director malfunctioning;
 - (vi) where the emergency drills include action by the non-handling pilot, the check should additionally cover knowledge of these drills;
- (b) emergency procedures including, as appropriate:
 - (i) engine fire;
 - (ii) propeller or engine overspeed;
 - (iii) fuselage fire (pilot-operated system of control);

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- (iv) engine failure before V1;
- (v) emergency operation of undercarriage and flap;
- (vi) pressurisation failure;
- (vii) fuel dumping;
- (viii) engine relight;
- (ix) hydraulic failure;
- (ix) electrical failure;
- (x) malfunction of engine or engine control;
- (xii) in the case of aircraft with two or more flight crew, coping with incapacitation of a member of the flight crew - this check should be carried out annually, i.e. on alternate Base Checks;
- (xiii) action to be taken following an ACAS or GPWS or windshear warning.

Some of these items will need to be covered by 'touch drills' and if the check is conducted in an aircraft (rather than in a simulator) they are normally best attended to on the ground.

- (c) a supplementary questionnaire on technical matters and operating procedures which, although not falling within the category of emergencies, are matters on which pilots should be tested at regular intervals. Some of the items may equally well be covered in the course of a line check. Typical items to be covered include:
 - (i) recognition and diagnosis of aircraft system faults for which there are no set drills;
 - (ii) radio failure procedures;
 - (iii) use of operations manuals including flight guides;
 - (iv) familiarity with latest amendments to operations manuals, and latest issues of information circulars, and instructions to aircraft crew;
 - (v) loading instructions;
 - (vi) knowledge of internal and external check lists;
 - (vii) aircraft equipment such as FMS, navigation systems, flight directors, weather radar, etc;

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- (viii) additional precautions for winter operations, anti-icing procedures and operations from contaminated runways;
- (ix) noise abatement procedures;
- (x) engine failure during stages of flight other than on take-off, especially critical stages such as during noise abatement, during a SID or flight over high ground, or during the approach.

On most of the larger modern aircraft the list of items that might usefully be discussed is likely to be extensive and examiners may prefer to deal with only a selection of items on a particular Base Check. In this event the items covered should be recorded to assist examiners in covering the full list in the course of two or three successive checks. Advantage should also be taken of the opportunity to give the pilots experience in the simulator of such rare occurrences as wind shear, flapless landing, dead stick landings etc.

3.4 Base checks - co-pilots

- 3.4.1 It is specially important that co-pilots be checked in their own particular duties in the co-pilot's seat, including flying the aircraft for take-off and landing. Although there will be some difference in emphasis from the Base Checks for pilots-in-command, the syllabus of the check should generally follow the pattern of that for pilots-in-command.
- 3.4.2 Commanders who may be required to handle the aircraft from the co-pilot's seat should be checked in that seat. Provided such a commander has completed a full left hand seat Base Check, and it is still valid, the right hand seat Base Check may be abbreviated to a minimum of:
 - (a) an engine failure on take-off;
 - (b) an asymmetric "go around" from decision height; and
 - (c) an asymmetric landing.
- 3.4.3 Where the normal flight crew complement provides for three pilots, with two copilots, taking turns at the Systems Panel/Engineer station, the Base Check should cover duties at BOTH stations.

3.5 Base checks – general considerations

- 3.5.1 Passengers may not be carried during Base Checks. The checks are to be carried out on special training or positioning flights.
- 3.5.2 Stopping of engines in an aircraft in flight should be subject to the recommendations and advice issued by the Authority from time to time.

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3.5.3 Where both examiner and equipment are approved for the purpose, checks may be conducted in a flight simulator.

3.5.4 All exercises carried out should be properly recorded in the training captain's report.

3.6 Instrument ratings – all pilots

3.6.1 The instrument rating test must be completed at intervals of not more than twelve months and should normally be carried out on the aircraft type on which the examinee is employed.

4 PERIODICAL TESTS - HELICOPTER PILOTS

4.1 General

4.1.1 The periodical tests for helicopter pilots shall be based, as far as it is practicable to do so, on those for aeroplane pilots set out in paragraph 3. The periods of validity are as stated in paragraph 1.9.2 a).

4.1.2 Captains and co-pilots should normally be checked in their respective seats. Captains who are required to operate as co-pilots must be checked in the co-pilot's duties, though not necessarily in the co-pilot's seat and be certificated to operate as co-pilot.

4.2 Line checks - all pilots

4.2.1 Conduct of the line check should closely follow the requirements of paragraph 3.2.1. Additionally, because helicopter pilots may be engaged in a wide variety of types of operation, operators should conduct checks to ensure the continued competency of their crew in carrying out special tasks. These latter may best be carried out as an extension to the LPC/OPC.

4.3 LPC/OPC - pilots required to engage in IFR flights

4.3.1 LPC/OPC should follow the pattern described in paragraph 3.3 and comply with the general considerations of paragraph 3.5. Some manoeuvres can only be conducted in VMC, and it follows that the Base Check will embrace a VMC part and an IMC part. It is acceptable to treat the VMC and IMC parts as separate checks, each with the period of validity stated in paragraph 1.9.2(a). It may be preferable to conduct the VMC part alternately by day and night, so that those items which are appropriate to night operation, and those which should only be attempted in daylight are checked at least annually. Operators will need to ensure that pilots comply with the Eleventh Schedule of the Civil Aviation Regulations in respect of night flying recency.

4.3.2 The content of the LPC/OPC should follow as closely as is practicable the items listed in paragraph 3.3.2, with the addition of items peculiar to helicopters. These latter should include, for example:

- (a) engine failure on take-off before Decision Point;

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- (b) engine failure on take-off after Decision Point (with transfer to simulated instrument flight as soon as safely practicable);
 - (c) flight and engine control system malfunctions for which accepted procedures are included in the flight manual;
 - (d) recovery from unusual attitudes, and techniques for auto-rotation in IMC.
- 4.3.3 Emergencies such as tail rotor failure, double engine failure, icing problems, etc., which it would be impossible or only possible with an unacceptable risk to practise in flight, should be covered in a simulator or by discussion on the ground.
- 4.4 Base checks - pilots not required to engage in IFR flights
- 4.4.1 Such pilots may be checked under visual conditions. In this case the test should include the applicable items of paragraphs 3.3.2 and 4.3.2. For single engine helicopters an auto-rotative approach to a designated area, with powered recovery to forward or hovering flight should also be included.
- 4.5 **Instrument ratings**
- 4.5.1 The provisions of paragraph 3.6 apply.

5 PERIODICAL TESTS - FLIGHT ENGINEERS

- 5.1 The periodical tests for flight engineers should generally follow the pattern of those for pilots-in-command discussed in paragraphs 3.2 and 3.3 above omitting those items that are clearly appropriate only to pilots. The tests, which may be combined with the test requirements for licence purposes (see paragraph 1.4.1(a)), should include:
- 5.1.1 An annual assessment of a flight engineer's competence to perform his duties whilst executing normal manoeuvres and procedures in flight (line check), and
 - 5.1.2 The Bi-annual assessment of a flight engineer's competence to perform his duties whilst executing emergency procedures (Base Check).
- 5.2 The tests as to the flight engineer's ability to carry out normal procedures must be carried out in the aircraft in flight. His ability to carry out emergency procedures may however be tested either in flight, or in a flight simulator specifically approved for this purpose.
- 5.3 These tests should normally be conducted by specially designated flight engineers. To the extent only that the test mentioned in paragraph 5.1.1 may take the form of an overall assessment of flight deck management and the performance of the flight crew as a whole, it may be conducted by specially designated training captains.

6 PERIODICAL TESTS - FLIGHT NAVIGATORS

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6.1 Operators proposing to use flight navigators as part of the operating flight deck crew should contact the Authority for advice on the requirements, at an early stage in their planning.

7 AREA AND AIRFIELDS COMPETENCE

7.1 Operators shall ensure that all flight crew members are familiar with the laws, regulations and procedures, and have the ability to speak and understand the language used for aeronautical radiotelephony communications pertinent to the performance of their duties, prescribed for the areas to be traversed, the aerodromes to be used and the air navigation facilities relating thereto. The operator shall ensure that all crew are familiar with such of these laws, regulations and procedures as are pertinent to the performance of their respective duties in the operation of the aircraft.

7.2 It is a requirement of the Civil Aviation Regulations Eleventh Schedule , that an aircraft commander shall demonstrate to the satisfaction of the operator that he/she has adequate knowledge of the route to be flown on each flight, and of the aerodromes (including alternates), terrain and minimum altitudes, seasonal meteorological conditions, ATC communications and navigational facilities and procedures associated with the route along the route(s) and applicable procedures over heavily populated areas and areas of high traffic intensity, obstructions, physical layout, lighting, approach aids and arrival, departure holding and instrument approach procedures, and applicable operating minima, search and rescue procedures, facilities and procedures to be used (see Chapter 2 paragraph 10). Certification (by the operator) of area and airfields competence is an annual requirement unless the commander, after the initial certification, has flown over the area and airfields in the preceding twelve months.

7.3 Each commander should be covered by a certificate of his competence in relation to each individual route and aerodrome, and operators involved mainly in scheduled services may find it convenient to adopt this procedure. The Authority may also agree to an alternative method of certification of commanders' route competence in relation to specified areas of operation or groups of routes.

7.4 If the alternative method is used, the operator must be aware that there may be a risk that a commander, on the basis of his general experience, could be certified as competent to operate without restriction to an aerodrome which presents special problems and clearly requires route experience or special briefing however great the commander's general experience may be. It is important, therefore, that the certificate issued by the operator should indicate positively the aerodromes to which the commander is permitted to operate.

7.5 To avoid reproducing a long list of aerodromes in each commander's area and airfields competence certificate, operators may find it convenient to maintain as part of the operations manual a list of "straight forward" aerodromes to which any experienced commander could operate without restriction. For certification purposes, reference to the list would suffice. No aerodrome should be classified as unrestricted

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unless it is also included in the operator's flight guide and has an established instrument approach procedure.

- 7.6 Any aerodrome not included in the operator's unrestricted list, to which a commander is considered competent to go, should be named in the certificate which should include a brief but clear indication of the manner in which competence has been established. To ensure consistency in certification, operators adopting the area method should also indicate in the manual the general nature of the special requirements to be met before a commander can be considered competent at a "restricted" aerodrome. It is not practicable in this publication to specify in a manner appropriate to all circumstances the detailed requirements to be met before a commander can be considered competent to operate to an aerodrome in a 'restricted' category. Ultimately the decision must rest on the good judgment and integrity of the operator and the measure of responsibility with which he/she approaches the problem.
- 7.7 The following are among the factors that operators may wish to take into account in deciding whether a commander can be considered competent for a particular flight:
- 7.7.1 The imposition of special aerodrome operating minima (if operations are also confined to daylight) could in some circumstances render prior experience of the aerodrome unnecessary – and enable the commander to get aerodrome experience in the course of normal operations.
- 7.7.2 There are aerodromes at which a combination of special aerodrome operating minima, prohibition of night landings and special pre-flight briefing on local conditions could be considered adequate for a first visit;
- 7.7.3 In general, a commander should not be considered competent to operate to an aerodrome at which nearby mountainous terrain makes the installation of an instrument approach aid impracticable, unless after an initial visit under supervision, he/she has within the preceding twelve months flown there as commander or copilot;
- 7.7.4 Competence to operate into a complex terminal area could sometimes, subject to acceptable general experience, be established in a flight trainer equipped for the purpose. If the complexity of ATC clearances and special characteristics of the local R/T were a factor, the use of tape recordings might be necessary.
- 7.7.5 In certain circumstances it may be permissible for an operator to base his decision that a commander is competent for a particular flight on the fact that he/she will have a co-pilot with suitable general experience in addition to recent experience of the particular route and aerodrome. This procedure should be adopted only in exceptional circumstances, and the co-pilot concerned should be named in the certificate which should include details of his relevant experience;
- 7.7.6 A commander whose experience is limited, say, to the Pacific and the Far East cannot be considered competent for flights in a completely different environment such as Europe or the North Atlantic.

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- 7.8 The use of audio/visual means to familiarize commanders with aerodrome approaches may be approved.
- 7.9 If the operator relies in any particular instance on the verbal briefing of a commander, it should be given by a person who is qualified to operate on the route in question: the commander should follow this by briefing his co-pilot before the flight commences.
- 7.10 All certificates raised in respect of a commander's area and airfields competence must be signed on the operator's behalf by a qualified official of appropriate status.
- 7.11 In a small undertaking the chief pilot or other person in charge should know in detail the experience and general competence of each of his pilots and can be expected to arrange for special route familiarisation and to raise additional certificates where necessary. For larger organisations a system of control that does not depend upon personal knowledge will be necessary in order to prevent a commander being rostered for a flight not covered by his certificate.

8 AIRCRAFT COMMANDERS AND CO-PILOTS – INSTRUMENT APPROACH PROFICIENCY

- 8.1 A further separate requirement to be met in respect of the commander and co-pilot is that they must have been tested (within the periods of validity stated in paragraph 1.9.2(a)) as to their proficiency in using instrument approach systems "of the type in use at the aerodrome of intended landing and any alternate aerodrome". The tests may be carried out in flight in actual or simulated instrument flight conditions, or in a simulator or flight trainer approved for the purpose.
- 8.2 To comply with this requirement, operators may find it convenient to ensure that commanders are tested as to their proficiency to carry out instrument approach procedures using all the pilot interpreted aids provided in the aircraft they operate. A separate test or record to cover the requirement may not be necessary, as it may be possible to meet the regulation in the course of instrument rating tests, Bi- annual competence checks and routine line checks. (see paragraph 1.9.2.)
- 8.3 On many aircraft the interpretation of instruments is the same for VOR as for ILS. In these circumstances, provided there is a record of an initial test as to competence on a VOR approach and provided the pilot remains in regular practice at ILS approaches and en-route use of VOR, the separate annual VOR approach test may be dispensed with.

9 AIRCRAFT COMMANDERS AND CO-PILOTS – RECENT TYPE EXPERIENCE

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- 9.1 A pilot shall not act as a pilot-in-command or operate as a PNF, unless he/she has, in the preceding 90 days, carried out at least three take-offs and landings in an aircraft of the type to be used, or in a flight simulator approved for the purpose. To regain recent type experience the pilot-in-command will have to fly with an Instructor in a non-revenue training flight or in an approved simulator and the flight training programme is to be approved by the Authority. The commander should also have made at least one take-off and landing in an aircraft of the type to be used in the preceding 28 days. On appropriate aircraft, with the Authority's agreement, this 28 days requirement may be met in an approved simulator. Manual landings are necessary to meet these requirements.
- 9.2 A co-pilot shall not operate the flight controls during take-off and landing, or operate as a PNF, unless, on the same type of aircraft, within the preceding 90 days, he/she has operated the flight controls during three take-offs and landings or has otherwise demonstrated competence on a flight simulator approved for the purpose. To regain the recent type experience the co-pilot will have to fly with an Instructor in non-revenue training flight or approved simulator.

10 **FLIGHT CREW CONVERSION TRAINING**

10.1 **Syllabi**

- 10.1.1 All type conversion training should be conducted in accordance with detailed syllabi included in the training manual. When considering programmes and syllabi for types of aircraft newly acquired, operators are urged to consult the Authority at the outset. The Authority will advise on the nature and scope of the training to be given, and early consultation will help to prevent difficulties and inconvenience to the operator when the syllabi is submitted for approval.

10.2 **Minimum experience requirements**

- 10.2.1 The standards for qualification and experience required of flight crew before being rostered for conversion training should be specified by the operator and agreed with the Authority.

10.3 **Ground training**

- 10.3.1 The operator should attach great importance to technical training and there should be a properly organised programme of ground instruction by competent tutors with adequate facilities, including any necessary mechanical and visual aids. If the aircraft concerned is relatively simple, private study may be adequate if the operator provides suitable manuals and/or study notes. It is important that the time allowed for ground training should be devoted exclusively to that purpose and that trainees should not be taken away from their studies or for normal duties. Authorised Officers will wish to examine premises and equipment to be used for ground training. They are also authorised to be present while tuition and lectures are in progress.

10.4 **Examinations and tests after ground training**

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10.4.1 Courses of ground instruction for flight crew, should incorporate written progress tests at the end of each distinct phase.

10.4.2 For all flight crew, the ground course should cover the survival training as detailed in Chapter 6.

10.4.3 The annual “emergency/survival” test as detailed in Chapter 6 should be given before any flying training is started.

10.5 Flying training for pilots

10.5.1 For all pilots taking a conversion course, the flying training should be systematic and sufficiently comprehensive to familiarise them thoroughly with all aspects of normal operation of the aircraft, including the use of all flight deck equipment, and with all emergency drills, procedures, handling techniques and limitations. Pilots on conversion flying training should not be interrupted by flying other aircraft types.

10.5.2 The “flight handling” sections of the syllabus should include all the requirements of the appropriate type rating tests, and in addition the following items if appropriate to the aircraft type:

(a) aeroplanes:

(i) visual “go around” from not more than 200 ft agl;

(ii) failures of flight director system, including ILS approach without flight director;

(iii) a typical noise abatement procedure;

(b) helicopters:

(i) practice of appropriate type rating test items under instrument flight conditions including failure of flight instruments and flight directors;

(ii) recovery from unusual attitudes under instrument flight conditions.

10.5.3 Each exercise should be practised until a satisfactory standard is achieved. The various take-off, “go around” and landing exercises should be performed at least twice. Records kept by the operator should show the number of times that each exercise was covered.

10.5.4 Particular emphasis should be placed on the practice of correct crew procedures for take-off, approach, landing and “go around”, and additionally, for helicopter pilots, in the procedures for IMC descent en-route in conditions of low cloud and poor visibility.

10.5.5 Pilots undergoing conversion training should at some stage be given an exercise in coping with incapacitation of another flight crew member. If the flight crew

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complement includes a flight engineer it will be necessary for pilots to be sufficiently familiar with his in-flight functions.

10.6 Additional requirements for commanders

10.6.1 Without prejudice to any of the requirements of a particular type rating test, the conversion training of aircraft commanders should include the following items insofar as they may be appropriate to the aircraft type:

- (a) landing with two engines inoperative;
- (b) landing without flap or slat, or with restricted flap;
- (c) landing with flying control system malfunction;
- (d) instrument approach and “go around” with flight director malfunction;
- (e) landing at night with one engine inoperative;
- (f) crosswind take-off and landing.

10.6.2 Commanders should also be given practice, normally in a simulator, in the stopping and starting of engines in flight and in any emergency drills that might fall to them while the co-pilot is handling the aircraft.

10.7 Additional requirements for co-pilots

10.7.1 Co-pilots (in addition to the handling practice already referred to) should be given adequate training in the execution of all emergency drills that might fall to them while the commander is flying the aircraft. Unless this is done in a flight simulator approved for the purpose it will be necessary for co-pilots to perform all drills (e.g. engine fire and relight) in flight where the training captain is flying the aircraft. Copilots should also be given practice, during conversion training, in the operation of all radio equipment and aircraft systems normally managed by the co-pilot while the commander is handling the aircraft.

10.8 Tests after flying training

10.8.1 Before they are assigned to line duty in a pilot's seat (whether under supervision or not) commanders and co-pilots must be certified by the operator as competent in all the functions and duties covered by the relevant Bi-annual Base Check. Training in these functions and duties MAY NOT be completed in the course of normal operations. All conversion flying training must therefore incorporate the Base Check described in paragraphs 3.3, 3.4 and 4.3 of this chapter.

10.8.2 Unless the aircraft, its handling characteristics and its flight instruments are closely similar to those of a type (I/R ON TYPE=TYPE SPECIFIC) on which the pilot is already experienced, his conversion training should incorporate an instrument rating

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test on the new type. This will normally be expected to be part of a conversion programme, regardless of the expiry date of an existing instrument rating.

10.8.3 Before pilots are assigned to line duty as commander or co-pilot, the operator shall certify, as a result of a check required by paragraph 3.2 or 4.2, that they are competent to execute normal manoeuvres and procedures under supervision. Before operating without supervision commanders and co-pilots must meet the full requirements of paragraph 3.2 or 4.2, as appropriate.

10.9 Flight under supervision

10.9.1 The conversion syllabus should provide for all pilots, after completion of flying training and initial tests, to operate a minimum number of sectors and/or flying hours “under supervision”. The minimum figures should be agreed with the Authority.

10.9.2 The “under supervision” period should NOT be used for the completion of the basic conversion syllabus. Its purpose is two fold. Firstly, it will enable the newly converted pilot to settle down to his duties on the new type in the company of an experienced and qualified pilot specially designated for the purpose, and to turn to him for advice if necessary. Secondly, it will enable the training staff to assess and verify the adequacy of the conversion training, and to ensure that proper operating standards are achieved at the outset, in the course of normal and varied operations.

10.9.3 “Under supervision” means

- (a) for a commander:
flying with an experienced pilot, qualified to act as the aircraft commander and specially designated by the operator to act as a supervising pilot, who should occupy the seat and perform the duties of co-pilot. (Some operators may wish the newly converted commander to operate a few sectors in the co-pilot's seat and this is acceptable if the supervising captain is in the commander's seat);
- (b) for a co-pilot:
flying in the co-pilot's seat with either:
 - (i) a qualified commander, specially designated for the purpose, occupying the commander's seat, or
 - (ii) any qualified commander in the commander's seat and a supervisory first officer specially designated for the purpose, occupying an additional crew seat in the flight deck.

10.9.4 On completion of the sectors under supervision a line check should be administered.

10.9.5 The “under supervision” sectors carried out by a newly qualified captain will have been completed with an experienced supervisory captain acting as co-pilot. Some operators may therefore wish to carry out a further period of flying, after the line check referred to at paragraph 10.9.4, teaming the new captain with a standard crew, and with a suitably qualified pilot, specially designated for the purpose, occupying the

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jump seat and acting only in an advisory capacity. It should be made clear that in this situation the newly qualified captain is the commander of the aircraft.

10.9.6 If the flight crew complement includes a pilot acting as a Systems Panel Operator he/she should, after conversion training and the initial test in these duties, operate a minimum number of sectors under the supervision of a qualified and specially designated person carried in addition to the flight crew of the aircraft.

10.10 Use of flight simulators for conversion training

10.10.1 The extent to which a flight simulator may be used for conversion/recurrent/recency training will be considered according to individual circumstances as approved by the Authority.

10.11 Flight engineers

10.11.1 Type conversion for flight engineers should follow the same general pattern as that of pilots. Newly trained flight engineers should not occupy the flight engineer's seat during take-off and landing on a public transport flight until they have completed all initial competence checks.

10.11.2 Flight engineers should operate a minimum number of sectors under the supervision of a suitably qualified and specially designated flight engineer. A line check report should be made on completion of the sectors under supervision.

10.11.3 Flight engineers undergoing conversion training should at some stage be given an exercise in coping with incapacitation of another flight crew member.

10.12 Variants of the same aircraft type

10.12.1 A company may operate a number of aircraft which, though of the same type, are not identical. They may differ in engines, systems, equipment, flight deck lay-out, operating procedures, performance, or in other respects. In such circumstances the operator must conduct a "differences course" for his crew to ensure they are adequately trained on each variant.

11 CONVERSION FROM FIRST OFFICER TO COMMANDER

11.1 It is essential that promotion to commander should be preceded by a planned "conversion" course, including up-grading of the type endorsement if necessary. An adequate number of sectors must be flown in the appropriate seat as commander under supervision. There should be a full commander's base and line check immediately before appointment.

12 SAFETY EQUIPMENT AND PROCEDURES (SEP)

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12.1 The Emergency and Survival Training, Practice and Training Requirements for flight crew and cabin crew are contained in Chapter 6 of this document.

13 TRAINING ON SPECIAL EQUIPMENT

13.1 Formal training should be given to aircraft crew as necessary on items of special equipment such as storm warning radar, flight director systems, auto-pilots, Loran, Doppler, Inertial Navigation/Reference System, Global Positioning System, Communications-Navigation-Surveillance (CNS)/Air Traffic Management (ATM) systems.

14 FLIGHT DESPATCHERS AND GROUND STAFF TRAINING AND TESTING

14.1 Operators shall provide training for ground staff directly involved with flight operations (including flight despatchers), in particular those employed in operations and traffic departments. The operator shall ensure that the flight despatcher demonstrates that he/she has the knowledge; and that he/she maintain familiarisation with all features of the operation which are pertinent to such duties, including the knowledge and skills related to human performance. Further training will be necessary from time to time (e.g. when new types of aircraft are acquired) and the arrangements in this connection will be taken into account in the consideration of applications for the variation of Certificates.

14.2 Operators are to ensure that Flight Despatchers undergo annual refresher training to be followed by a test of their proficiency. The training and refresher syllabus is to be submitted to the Authority for approval.

14.3 To maintain currency flight despatchers must show evidence of having despatched a flight at least once every 90 consecutive days. A despatcher who fails to do so will be required to sit for a written assessment paper and to attend a refresher training prior to resuming duties.

14.4 The detailed requirement for flight despatchers are spelt out in Appendix L of this document.

15 DANGEROUS GOODS TRAINING

15.1 Operators are required to establish and maintain dangerous goods training programmes for those aircraft crew and ground staff concerned. Refer to Appendix J for details.

16 SECURITY TRAINING

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- 16.1 The operator shall establish, maintain and conduct approved training programmes which enable the operator's personnel to take appropriate action to prevent acts of unlawful interference such as sabotage or unlawful seizure of aeroplanes and to minimise the consequences of such events should they occur.
- 16.2 The training programme shall include at least the elements identified in Appendix I. Such training programmes shall be periodically reviewed to ensure that it is kept abreast with the latest developments.
- 16.3 The operator shall also establish and maintain a training programme to acquaint appropriate employees with preventive measures and techniques in relation to passengers, baggage, cargo, mail, equipment, stores and supplies intended for carriage on an aeroplane so that they contribute to the prevention of acts of sabotage or other forms of unlawful interference.

17 USE OF SIMULATORS

- 17.1 Subject to the approval of the Authority, simulators may be used for the following purposes:
- (a) Type Rating Training and Checks
 - (b) Instrument Rating Training and Checks
 - (c) Bi-annual Base Checks
 - (d) Initial Line Checks
 - (e) Low Weather Minima Training
 - (f) Specified Aerodrome Competency Checks
 - (g) Certification of Flight Crew
 - (h) Re-current Training
 - (i) Line-Oriented Flight Training
 - (j) Recent type experience

17.2 Application for a simulator Certificate of Approval

- 17.2.1 Application shall be made to the Authority on form DCA (FO) 71 and submitted to:

Airworthiness/ Flight Operations Division
Department of Civil Aviation
SSR International Airport
Plaisance

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17.2.2 The application form DCA (FO) 71 must be accompanied by an Approved Test Guide / Qualification Test Guide.

17.2.3 Simulator Certificate of Approval shall be displayed in the simulator.

17.3 **Conditions of approval**

17.2.2 The approval will be rendered invalid under the following circumstances: a) Modification of simulators, or their motion and visual systems. b) Temporary deactivation of a currently qualified simulator. c) Re-location of simulator to a new location.

17.3.2 The operator will have to re-apply for a simulator approval if it wishes to put the simulator back into use.

17.4 **Simulator Maintenance**

17.4.1 Following satisfactory completion of the initial evaluation, a periodic check system should be established to ensure that simulators continue to maintain their initially qualified performance, functions and other characteristics.

17.4.2 Periodic evaluations will be conducted on a yearly basis prior to the renewal of the Certificate of Approval. Applications for the renewal of the Certificate of Approval must be made on DCA (FO) 71 at least one month prior to the date of expiry.

17.5 **Quality Assurance System**

17.5.1 The operator's quality assurance system shall include a quality programme for its flight simulators. The programme shall include periodic tests consisting of both objective and subjective tests. These tests should be made available to the Authority on request.

17.6 The use of simulators not owned and/or operated by the AOC holder

17.6.1 An AOC holder (applicant) may apply to use simulators that are not owned by them. The simulator owner's qualification test guide shall be submitted together with the application form. Such simulators shall have a certificate of approval from the respective local authority. Simulators that do not have the approval of the respective local authority will not be considered.

17.6.2 The Authority may (where appropriate) conduct a validation test on the performance of the simulator.

17.6.3 The applicant shall pay for all fares, expenses and fees incurred by the Authority in the conduct of the duties.

17.7 Conditions for approval of simulators not owned and/or operated by the AOC holder

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17.7.1 The approval will be rendered invalid under the following circumstances:

- (a) Modification of simulators, or their motion and visual systems.
- (b) Temporary deactivation of a currently qualified simulator.
- (c) Re-location of simulator to a new location.

17.7.2 The operator will have to re-apply for a simulator approval if it wishes to put the simulator back into use.

18 REQUIREMENTS OF EXPERIENCE, RECENCY AND TRAINING APPLICABLE TO SINGLE PILOT OPERATION UNDER IFR OR AT NIGHT

18.1 As required under Chapter 2 paragraph 2.4, all aeroplanes operated by a single pilot under IFR or at night shall in addition to performance requirements promulgated in AOCR Appendix M, shall also satisfy the following requirements:

- (a) The operator shall include in the Operations Manual a pilot's conversion and recurrent training programme which includes the additional requirements for a single pilot operation;
- (b) In particular, the cockpit procedures must include:
 - (i) Engine management and emergency handling;
 - (ii) Use of normal, abnormal and emergency checklists;
 - (iii) ATC communication;
 - (iv) Departure and approach procedures;
 - (v) Autopilot management; and
 - (vi) Use of simplified in-flight documentation.
- (c) The recurrent checks required by Eleventh Schedule of the Civil Aviation Regulations shall be performed in the single-pilot role on the type or class of aeroplane in an environment representative of the operation;
- (d) The commander shall have a minimum of 50 hours flight time on the specific type or class of aeroplane under IFR of which 10 hours is as commander;
- (e) The minimum requirement recent experience for a pilot engaged in a single pilot operation under IFR or at night shall be 5 IFR flights, including 3

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instrument approaches, carried out during the preceding 90 days on the type or class of aeroplane in the single-pilot role. This requirement may be replaced by an instrument approach check on the type or class of aeroplane; and

- (f) The commander has successfully completed training programmes that include, in addition to the requirements in paragraph 18 above, passenger briefing with respect to emergency evacuations; autopilot management; and the use of simplified in-flight documentation.

19 **FLIGHT CREW TRAINING AND CHECKING FOR OPERATION AT NIGHT AND/OR IMC BY SINGLE ENGINE TURBINE-POWERED AEROPLANE**

- 19.1 The minimum flight crew experience required for night/IMC operations by single engine turbine-powered aeroplanes shall be as prescribed in Para 18(d) and 18(e) above.
- 19.2 An operator's flight crew training and checking shall be appropriate to night and/or IMC operations by single engine turbine-powered aeroplanes, covering normal, abnormal and emergency procedures and, in particular, engine failure, including descent to forced landing in night and/or in IMC conditions.

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CHAPTER 5

ORGANISATION AND FACILITIES

1 MANAGEMENT AND EXECUTIVE STAFF

- 1.1 A sound and effective management structure is essential. It is particularly important that the operational management should have proper status in the organisation and be in suitably experienced and competent hands. The duties and responsibilities of managers, senior executives and designated representatives in charge of operational control must be clearly defined in writing, and chains of responsibility firmly established. The number and nature of the appointments may vary with the size and complexity of the organisation. An excess of managers can lead to fragmentation of responsibility and control, and to as much difficulty and inefficiency as a shortage and a lowering of operational standards can as easily result. In general, the appointment of deputies for managerial posts should be kept to a minimum and particular care should be taken in defining their functions and responsibilities. Before an AOC can be granted, the Authority must be satisfied that the management organisation of the operator is adequate and properly matched to the operating network and commitments.
- 1.2 The positions held by key personnel will be listed in each Air Operator Certificate, and it will be a condition of the Certificate that the Authority shall be given advance notice of any intended change in appointments or functions.

2 ADEQUACY AND SUPERVISION OF STAFF

2.1 Aircraft Crew

- 2.1.1 It will be necessary for operators to satisfy the Authority they have a sufficient number of aircraft crew for the operations to be undertaken. The adequacy of the aircraft crew will not be assessed against a set formula, as there will clearly be a wide variation in requirements according to particular circumstances, though it will be expected that even if only one aircraft is to be operated a minimum of two properly qualified aircraft crews will be employed. In certain cases where the volume of work undertaken is small the normal requirement concerning the number of aircraft crew employed may be relaxed. It is important, that all grades of aircraft crew should be employed fulltime under a suitable service contract. The employment of part time or "freelance" aircraft crew will not be acceptable except in exceptional circumstances and with the approval of the Authority.
- 2.1.2 Flights over routes for which a flight navigator is required will not normally be permitted unless the operator has the full-time services of a sufficient number of fully qualified and licensed Flight Navigators. If the operations are on a very small scale, one navigator may be sufficient. If the introduction of advanced pilot operated navigation aids is considered to render the carriage of a licensed Flight Navigator unnecessary for a particular route then application to operate such a route without a

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licensed Flight Navigator may be submitted to the Authority and will be considered on its merits.

- 2.1.3 Suitable arrangements must be made for the supervision of all grades of aircraft crew by persons having the experience and qualities necessary to ensure the maintenance of high professional standards. This will necessitate such appointments as Chief Pilot, Flight or Fleet Manager and in the larger organisations Chief Navigator, Chief Flight Engineer and Chief Steward/Stewardess. The duties and responsibilities of these officials should be carefully defined, and their line flying commitments suitably restricted in order that they may have sufficient time for their managerial functions. If there are too many such appointments, they can create as many problems as they solve and the Authority will be concerned only to verify that arrangements of the professional supervision of aircraft crew are properly related to the size and nature of the operator's organisation.
- 2.1.4 Operators must ensure that their crew shall NOT exercise the privileges of their licences at any time when they are aware or have been told by competent medical authority, of any decrease in their medical fitness which might render them unable to safely exercise those privileges. Such decrease in fitness shall be reported immediately to the Authority.

2.2 Ground Staff

- 2.2.1 The number of staff needed will depend primarily upon the nature and the scale of flight operations, and the Authority will take full account of the operator's particular circumstances. The operations and traffic departments, in particular, shall be adequately staffed with trained personnel who have a complete understanding of the nature of their duties and responsibilities. Operators shall provide any further training that may be necessary from time to time (eg when new types of aircraft are acquired) and the arrangements in this connection will be taken into account in the consideration of applications for the variation of Certificates.

3 FACILITIES

- 3.1 The nature and scale of office services required administrative staff and office equipment etc should be related to the numbers of executive and other staff employed. It is particularly important that office services are sufficient to ensure that operational instructions and information of all kinds are produced and circulated to all concerned without delay.
- 3.2 In cases where the provisions of printing facilities for manuals, manual amendments and other necessary documentation is not warranted by the size of the company, the operator must show that he/she has efficient alternative arrangements.

4 ACCOMMODATION

- 4.1 Office space at each operating base/line station must be sufficient to provide a suitable working environment for the operating staff employed. Adequate provision must be made for the traffic staff, for operational planning, for the storage and display of

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essential records, and for flight planning by flight crew. If flight planning facilities for flight crew are provided by the airport authority, handling agents, the space provided by the operator can normally be reduced, but it is essential that reasonable accommodation should be made available for aircraft crew to use before and between flights.

5 OPERATIONS LIBRARY

5.1 At each operating base/line station the operator should maintain an adequate and appropriate library of maps, charts, flight guides, operations manuals and other documents needed for reference and planning purposes, and for carriage in flight. The library should be kept in an orderly fashion and responsibility for its maintenance clearly defined.

5.2 Maps, charts, and flight guides held should cover the whole of the region for which the operator is, or wishes to be, certificated.

5.3 Arrangements should be made for the amendment of manuals, flight guides etc, and for bringing the amendments to the notice of aircraft crews and other operating staff concerned. A record should be kept of the distribution of manuals and amendments.

6 AIRCRAFT LIBRARY AND NAVIGATION BAG

6.1 There shall be an effective system to ensure that aircraft are provided with an adequate and updated library of manuals, maps and charts, flight guides checklists and other necessary documents, including data in electronic form, supported by an efficient amendment service. Content lists should be provided for making up the aircraft library and navigation bag, and aircraft drill cards should include an item requiring libraries and navigation bags to be checked before departure.

7 FLIGHT STAFF INSTRUCTIONS

7.1 Flight manuals, operations manuals, and other standing instructions must be supplemented by a systematic procedure for bringing urgent or purely temporary information to the notice of aircraft crews. This should be achieved by a numbered series of flight staff instructions or crew notices issued by or under the direct authority of a senior operations official. When the issue of such a temporary instruction entails amendment of a standing instruction, the amendment should be made without undue delay and periodical checklists should be issued to show which of the temporary instructions are current. Full use should be made of these instructions to bring significant Aeronautical Information Circulars, NOTAM, changes in aerodrome operating minima, etc to the attention of aircraft crew.

8 REGULATIONS AND AERONAUTICAL INFORMATION

8.1 All flight crew, and other operating staff who may be concerned, should have access at their normal operating base to:

- (a) Mauritius AIP;

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- (b) The Civil Aviation Regulations currently in force and any amendments thereto;
 - (c) NOTAM; in particular affecting facilities over the routes, destination, enroute alternates and diversion;
 - (d) Aeronautical Information Circulars; and
 - (e) Flight rules of the State in which the aerodrome is located and the requirement to comply with these rules.
- 8.2 Where this information is readily available to crew in an Aeronautical Information Service unit, it may not be necessary for the operator to duplicate the service, but it is nevertheless his responsibility to ensure that the information is available.
- 8.3 If the normal operating base/line station is abroad, the local Aeronautical Information Publication, NOTAM and appropriate manuals shall be provided. This will be agreed with the Authority.
- 8.4 Operators shall ensure that all employees when abroad know that they must comply with the laws, regulations and procedures of those States in which operations are conducted.

9 OCCURRENCE AND FLIGHT SAFETY REPORTS

- 9.1 Responsibility for co-coordinating action on occurrence reports, mandatory or otherwise, and for initiating any necessary investigations should be assigned to a suitably qualified senior official with clearly defined authority and status. Reports should normally be made to the Authority through this official.
- 9.2 Particular care should be taken to ensure that the originators of flight safety reports are informed of the action taken, and where it would be useful in the interest of safety the circumstances of the incident should be made generally known within the operator's organisation.

10 ACCIDENT PREVENTION AND FLIGHT SAFETY PROGRAMME

- 10.1 The operator is to appoint an accident prevention adviser who will establish and maintain an accident prevention and flight safety programme. The programme should aim:
- (a) at creating an awareness and understanding of accident prevention methods throughout the organisation;
 - (b) identifying hazards and the recommendations to eliminate them;
 - (c) keeping management and operating staff informed of safety trends and problems within the organisation and industry;

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- (d) circulation of safety data, information concerning the experiences of other operators and relevant information; etc
- (e) to establish and maintain a flight data analysis programme. The flight data analysis programme shall be non-punitive and contain adequate safeguards to protect the source(s) of the data.

10.2 He should report periodically to the CEO of the company on safety matters and must be free to make recommendations to any manager, if necessary, in the interest of flight safety.

10.3 **Training on Human Factors and Crew Resource Management**

10.3.1 An operator shall establish and implement a human factors and crew resource management training programme for all operating staff. These training programmes shall be regularly reviewed and updated, as appropriate, to keep abreast of industry standards. Operating staff is defined in the Civil Aviation Regulations the employees and agents employed by the operator, whether or not as members of the crew of the aircraft, to ensure that the flights of the aircraft are conducted in a safe manner.

10.3.2 The training shall include, but should not be limited to, the following topics:

- (a) Communications
- (b) Situational awareness
- (c) Problem-solving / decision-making / judgement
- (d) Leadership / followership
- (e) Stress management
- (f) Critique
- (g) Interpersonal skills

10.4 **Flight Safety Documents System**

10.4.1 The operator shall develop a flight safety documents system. The development of a flight safety documents system is a complete process, and changes to each document comprising the system may affect the entire system. The operational documents are to be consistent with each other, and consistent with regulations, manufacturer requirements, and Human Factors principles. It is also necessary to ensure consistency across departments as well as consistency in application. Hence, the emphasis on an integrated approach, based on the notion of the operational documents as a complete system.

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10.4.2 The guidelines is provided in Appendix K1 and it addresses the major aspects of an operator's flight safety documents system development process. The guidelines are based not only upon scientific research, but also upon current best industry practices, with an emphasis on a high degree of operational relevance.

11 NAVIGATIONAL FLIGHT PLANS

11.1 Operators will be required to complete an ATS operational flight plan for each intended flight and it shall be approved and signed by the commander and/or where applicable the flight despatcher. A copy shall be kept by the operator or designated agent.

11.2 Operators will be required to supply for the use of flight crew navigational flight plan forms or prepared flight plan/logs to be used on all flights. The navigational flight plans should be signed and accepted by the commander and/or where applicable, flight despatcher. The following entries should be provided for:-

- (a) Name of flight deck crew;
- (b) Flight number (or other designation), date, aircraft type and registration;
- (c) Names of reporting and turning points together with codings and frequencies of radio aids;
- (d) Tracks and distances;
- (e) Flight times between reporting and turning points;
- (f) ETA, revised ETA and ATA at each reporting and turning point;
- (g) Minimum safe altitude for each stage of the flight;
- (h) Altimeter settings at points of departure and destination;
- (i) Cleared cruising altitudes or flight levels;
- (j) Destination alternate aerodrome and en-route alternate aerodromes for extended range operations by aeroplanes with two engine power-units (ETOPS);
- (k) ETOPS; RVSM; MNPS; RNP
- (l) Information from meteorological broadcasts;
- (m) A brief and simple statement of the fuel requirement and the manner in which it was computed (e.g. three figures – fuel to destination, fuel for diversion and holding, fuel for contingencies and total fuel – would suffice);

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- (n) If not maintained separately, a fuel log in which to record in-flight fuel checks;
- (o) Space for noting ATC clearances;
- (p) Taxi, airborne, landing and engine-off times.

11.3 Operators should ensure that the forms are properly completed for each flight and retained for a period of at least three months.

11.4 For scheduled journeys it is desirable that operators should use a prepared navigational flight plan on which tracks, distances, minimum safe altitudes, etc are printed. Special precautions will be necessary, of course, to ensure that amendments are incorporated as they become effective.

11.5 Voyage Reports/Records

11.5.1 The Operator shall maintain a Report/Record for all flights undertaken. The Voyage Report/Record shall be completed by the Commander of the flight and retained by the operator for a period of at least 6 months. The Voyage Report/Record shall include the following information:

- (a) Names of all crew, their duty assignments and in-flight rest times (as applicable);
- (b) Details of the flight undertaken, such as date, flight number; and
- (c) Significant times of the flight such as pushback, taxi, takeoff, landing and chocks on.

Note: All times shall be in UTC.

11.5.2 The Voyage Report/Record shall be signed by the Commander of the flight who shall be responsible for the accuracy of the data entered thereon. All entries shall be made in indelible ink or indelible pencil.

11.6 Records of Emergency and Survival Equipment Carried

11.6.1 The operator shall have available for immediate communication to rescue coordination centres lists containing information on the emergency and equipment carried on board any of their aircraft engaged in international air navigation. The information shall include, as applicable, the number, colour and type of life rafts and pyrotechnics, details of emergency medical supplies, water supplies and the type and frequencies of the emergency portable radio equipment.

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12 COMMANDER'S FLIGHT BRIEF

- 12.1 For flights on routes not normally flown, commanders must be provided with a suitable brief, a copy of which should be retained by the operator for at least three months. The brief should include guidance on the schedule to be maintained and on all operational aspects of the voyage not fully covered in the operations manual including in particular details of the routes to be flown, specific aerodrome operating minima for all aerodromes (including alternates) likely to be used, and details of the navigation and terrain clearance procedures to be used.

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CHAPTER 6

**EMERGENCY AND SURVIVAL TRAINING, PRACTICE AND TESTING
REQUIREMENTS FOR FLIGHT CREW AND CABIN CREW**

1 GENERAL REQUIREMENTS

1.1 Statutory Requirements

1.1.1 Statutory requirements relating to the training and periodical testing of crews are prescribed in the Civil Aviation Regulations. The primary purpose of this chapter is to indicate the arrangements considered necessary to secure an adequate standard of compliance with the statutory provisions.

1.1.2 Further details and references on training requirements and standards can be found in ICAO Document 7192-AN/857, Training Manual Part E-1 Cabin Attendants' Safety Training.

1.2 Crew Co-ordination and Combined Training

1.2.1 The successful containment of aircraft emergencies depends heavily upon effective co-ordination and two-way communication between flight crew and cabin crew member.

1.2.2 Operators are expected to make every effort to provide combined training for flight crew and cabin crew. Much of the training that both must receive prior to operating public transport aircraft covers common ground; paragraphs 3 (Initial Training), 5 (Aircraft Type Training) and 7 (Recurrent Training) of this Chapter specify training that all crew members must be given.

1.2.3 Additional training that cabin crew must receive is listed in paragraphs 4, 6 and 8. Flight crew should be made aware of such additional training provided to cabin crew in compliance with this requirement.

1.2.4 Particular emphasis should be placed on the provision of joint practice in aircraft evacuations so that all who are involved learn of the duties other crew members must perform before, during and after the evacuation. The importance of effective co-ordination and two-way communication between flight and cabin crew in various abnormal and emergency situations should also be stressed. Emphasis should also be placed on co-ordination and communication within the crew in normal operational situations including the use of correct terminology, common language and effective use of communications equipment.

1.2.5 Cabin crew should also be trained to identify unusual situations that might occur inside the passenger compartment, as well as any activity outside the aircraft that could affect the safety of aircraft and/or passengers and effectively communicate such information to the flight crew.

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1.2.6 When combined training cannot be arranged, an operator's instructors should adopt the role of flight crew or cabin crew, as appropriate.

1.2.7 To facilitate training and to promote consistency of drills and procedures, it is essential that there is effective liaison between flight crew and cabin crew training departments.

1.3 Training Syllabus

1.3.1 A detailed emergency and survival training and testing syllabus is to be specified in the training manual. The syllabus should differentiate between initial training, aircraft type training, recurrent training, the annual emergency survival test and the 24-month periodic practice.

1.4 Training Staff and Examiners

1.4.1 A suitably qualified person should be appointed to manage cabin safety training and testing. Additionally, instructors and examiners will need to be appointed to provide instruction, supervise practice and conduct tests. All training must be under the supervision of an instructor who has the knowledge, ability and experience to conduct such training. Details of all such appointments shall be submitted to the authority before it becomes effective.

1.5 Supervision of Instructors and Examiners

1.5.1 The conduct of crew training and of tests carried out by the operator's instructors may be observed by Authorised Officers.

1.6 Records of Emergency and Survival Training and Tests

1.6.1 Records must be maintained to show trainees' attendance at each type of training and include information about the results of tests. Records should incorporate certificates indicating the competence of trainees to perform the duties on which they have been tested. Advice on the form of records and certificates may be obtained from the Authority.

1.6.2 Operators must keep records for all crew members to show when the next practices and tests are due for renewal. There should also be an effective system to guard against crews being rostered for duty when practices and tests are overdue. The annual emergency and survival test is valid for twelve months.

1.6.3 Records of all initial training aircraft type training, recurrent training, periodic practice and testing of all crew must be made available when requested by the Authority.

1.6.4 To facilitate inspection by the Authorised Officers, all crews must carry their certificate of proficiency issued by the operator whenever they are operating a flight.

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1.7 Use and Approval of Aircraft Emergency Training Apparatus

- 1.7.1 Provision is made in the Civil Aviation Regulations for use of “mock ups” for certain periodical tests. These devices must be individually approved by the Authority for test purposes and may be used for such purpose only under the supervision of a person approved for that purpose. Approvals normally restrict the use of such devices to the particular operator's crews.
- 1.7.2 Details regarding the approval of training apparatus and the approval of personnel responsible for conducting the training and testing on such apparatus are contained at paragraph 10 of this Chapter.

1.8 Lease of Mauritius Registered Aircraft Operated By Foreign Cabin Crew

- 1.8.1 Subject to the Authority's approval, consideration may be given to foreign cabin crew to undergo a special training programme in lieu of the requirements as spelt out in paragraphs 3, 4, 5, 6, 7 and 8 of this chapter. All necessary training records and information pertaining to the foreign operator's cabin crew shall be provided to the Authority at least 7 working days in advance for assessment.
- 1.8.2 Any special training programme approved by the Authority shall be at least 2 days in duration. Such training programme shall include all testing requirement as spelt out in this chapter in order to enable the foreign cabin crew to operate charter flights for a short period under a Mauritius Operator Certificate.
- 1.8.3 Authorised Officers will conduct an inspection of such special training programme including the first flight being carried out by the operator using the foreign cabin crew. The operator shall bear all expenses incurred in carrying out such inspections.

2 PURPOSE AND PROVISION OF TRAINING

2.1 Applicability

- 2.1.1 The requirements of this Chapter are applicable to all operating flight crew and cabin crew carried on board an aircraft.

2.2 Purpose

- 2.2.1 The purpose of emergency and survival training, practice and testing is to provide crew with the knowledge, skills and confidence needed to ensure that they deal efficiently with different types of emergency and survival situations.

2.3 Arrangements

- 2.3.1 Operators are to ensure that organised courses of instruction are given by qualified instructors on the use of all emergency and survival equipment, and on all emergency procedure and drills, including aircraft emergency evacuation.

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2.4 **Training Aids**

2.4.1 Suitable training aids should be provided to enhance the presentations in both classroom and practical instruction sessions.

2.5 **Before Flying on Aircraft**

2.5.1 Before flying training commences on an actual aircraft, all crew are to have completed successfully all appropriate training, practice and tests as described in this Chapter.

2.6 **Introduction of New Equipment**

2.6.1 Operators are to ensure that they have an established procedure for all crew to receive training and practice on any new equipment that is introduced.

3 **INITIAL TRAINING - ALL CREW**

3.1 **Introduction**

3.1.1 Crew are to be trained in the following subjects which are of a general nature and not necessarily related to a specific aircraft type.

3.2 **Crew Co-ordination**

3.2.1 Emphasis is to be placed on the importance of effective co-ordination and two-way communication between flight crew and cabin crew in various emergency situations. Cabin crew should be trained to be alert, and to identify unusual situations that might occur inside the passenger compartments, as well as any activity outside the aircraft that could affect the safety of the aircraft or its occupants. The need for effective communications or accurate information between flight crew and cabin crew must be stressed.

3.3 **Aeromedical and First Aid Topics**

3.3.1 Instruction should be given on aeromedical topics such as:

- (a) first aid subjects appropriate to the aircraft type, i.e. its size and the number of flight crew carried;
- (b) guidance on the avoidance of food poisoning, with emphasis on the choice of a pre-flight meal and the importance of the commander and co-pilot eating different food at different times during the flight, especially on long sectors;
- (c) the possible dangers associated with the contamination of the skin or eyes by aviation fuel and other fluids and their immediate treatment;
- (d) the recognition and treatment of hypoxia and hyperventilation; and

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- (e) first aid associated with survival training appropriate to the route operated (e.g. polar, desert and jungle).

3.3.2 Flight crew who operate on aircraft where cabin crew are not carried should undertake training in basic first aid that is to include the use and contents of first aid kits and in cardiopulmonary resuscitation.

3.4 Fire and Smoke Training

3.4.1 Practical fire and smoke training must be conducted under the supervision of an instructor who has the knowledge, ability and experience to conduct such training.

3.4.2 Both theoretical and practical training should be given. The training is to:

- (a) an appreciation of the chemistry of fire as a preliminary to consideration of the choice of extinguishing agents for particular fire situations, the techniques of applying extinguishing agents, and if practical, the consequences of misapplication and their use in a confined space; and

- (b) a demonstration or film on fire extinguishers being used on various types of fires. Fires should be related to typical aircraft interior equipment and include galley fires, fires in toilets, upholstery, passenger service units and electrical installations.

3.5 Water Survival Training

3.5.1 Where flotation equipment is carried, a comprehensive wet drill to cover all ditching procedures must be practised by all crews. This wet drill is to include, as appropriate, practice of the actual donning and inflation of a life-jacket, together with a demonstration or film of the inflation of life-rafts and/or slide-rafts. All crews must board a life raft or a similar flotation equipment from the water whilst wearing their uniform or similar attire with a life-jacket identical to that being carried on the aircraft. Training must include the use of all survival equipment carried on board the life raft or flotation equipment and any additional survival equipment carried separately on board the aircraft.

3.5.2 Operators conducting intensive offshore helicopter operations will need to carry out the wet drills annually. Consideration should be given to the provision of further training such as underwater escape training.

3.6 Survival Training

3.6.1 Operators are to provide survival training, including the use of any survival equipment carried, appropriate to their areas of operation, e.g. polar, desert, jungle or sea.

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3.7 Human Factors

3.7.1 Training should address the physiological effects on the human body of flying, the problems associated with pressure change and hypoxia and the need for restrictions on underwater diving. Training should include information on flight time limitations, the effects of operating for extended periods of time and the effects of time zone changes. Operational limitations should include illness, use of alcohol and drugs, blood donations etc. Advice should be given on general health care, especially whilst operating overseas, and the need for preventive medicine such as immunisation, when operating to potentially infected areas.

3.8 Aerodrome Emergency Services

3.8.1 The operational procedures of ground-based emergency services at aerodromes should be discussed.

3.9 Aviation Security

3.9.1 Training is to given in aspects of aviation security listed in Appendix I of this document.

3.10 Dangerous Goods Training

3.10.1 Operators are required to provide Dangerous Goods training. See Appendix J for details.

3.10.2 Operators must ensure that all its crew members have passed a written test on Dangerous Goods prior to operating as a crew member. For validity reasons, this test has to be re-taken before the end of the second year of its currency.

3.11 Cabin Crew Service Duties

3.11.1 Cabin crew should also receive training in their normal flying duties including the location and use of all cabin and galley equipment and to take the necessary safety precautions to prevent injuries when using such equipment.

4 INITIAL TRAINING - ADDITIONAL ITEMS FOR CABIN CREW

4.1 General

4.1.1 Cabin crew are to be trained in the following additional subjects which are of a general nature and not necessarily related to a specific aircraft type.

4.2 Discipline and Responsibilities

4.2.1 Operators must ensure that cabin crew receive training on:

- (a) the importance of performing their duties in accordance with the operations manual;

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- (b) continuing competence and fitness to operate as a cabin crew member with special regard to fatigue;
- (c) an awareness of the aviation regulations relating to cabin crew and the role of the Authority;
- (d) general knowledge of relevant aviation terminology, phases of flight and parts of the aircraft;
- (e) pre-flight briefing of cabin crew and the provision of necessary safety information with regard to their specific duties;
- (f) the importance of ensuring that relevant documents and manuals are kept up to date with amendments provided by the operator;
- (g) the importance of identifying when cabin crew members have the authority and responsibility to initiate an evacuation and other emergency procedures; and
- (h) the importance of safety duties and responsibilities, and the need to respond promptly and effectively to emergency situations.

4.3 First Aid

4.3.1 Instruction should be given on first aid and the use of first aid kits, together with the application of any drugs. The following subjects should be covered:

- (a) haemorrhage;
- (b) wounds;
- (c) fractures, including dislocation and sprains;
- (d) burns;
- (e) care of the unconscious;
- (f) shock;
- (g) heart attacks;
- (h) stroke, epilepsy, diabetes;
- (i) rescue breathing and cardiopulmonary resuscitation for infants and adults;
- (j) use of therapeutic oxygen and oxygen sets;
- (k) poisoning;

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- (l) emergency childbirth;
- (m) choking;
- (n) stress reactions and allergic reactions;
- (o) air sickness; and
- (p) asthma.

Note: Crew must demonstrate their proficiency in rescue breathing and cardiopulmonary resuscitation using a dummy specifically designed for the purpose.

4.4 Fire and Smoke Training

4.4.1 It is particularly important that cabin crew should be given theoretical and practical training in dealing with emergency situations involving fire and smoke in the cabin. The training is to include:

- (a) the responsibility of cabin crew to deal promptly with emergencies involving fire and smoke. Emphasis should be placed on the importance of identifying the actual source of the fire;
- (b) the importance of informing the flight crew immediately that fire or smoke is discovered and of keeping them informed as the situation develops. The importance of crew co-ordination and communication is to be emphasised, together with an established procedure for communication with the flight deck; and
- (c) the importance of ensuring that passengers are aware of no smoking areas and obey no smoking signs. Emphasis is to be placed on the frequent and systematic checking of toilets (including smoke detectors, if applicable) and other areas which are not part of the seating accommodation;

4.5 Abusive Passengers

4.5.1 Operators are to give advice to cabin crew on the management of passengers who become abusive; this often arises from excessive consumption of alcohol or the effects of medication/drugs, or a combination of both.

4.6 Seat Allocation

4.6.1 Cabin crew are to be given training on the importance of correct seat allocation with particular emphasis on the seating of disabled passengers and the necessity of seating able-bodied passengers adjacent to unsupervised exits.

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4.7 Prohibited and Dangerous Items

4.7.1 Cabin crew should be given training in aspects of the carriage of prohibited and dangerous goods and the handling of in-flight dangerous goods incident.

4.8 Flight Time Limitations

4.8.1 Cabin crew must be made familiar with the company flight time limitations scheme and the statutory requirements regarding crew fatigue (see appendix C2).

4.9 Crew Resource Management (CRM) Training

4.9.1 Operators must provide CRM training for all cabin crew. The training should focus on the functioning of crew members as a team and not simply as a collection of competent individuals. They should be shown the importance of effective teamwork and communication, the barriers involved and how to overcome them. Emphasis should be given on their role as safety practitioners and the need to maintain a high level of awareness in the environment they operate in.

4.10 Aircraft Safety on the Ramp

4.10.1 Training should be given in the following areas:

- (a) Selection and implementation of appropriate rapid disembarkation or evacuation measures.
- (b) The need for an external means of disembarkation to be available from the time an aircraft comes on a stand until it departs, excluding periods when there are no persons on board.
- (c) The need to ascertain the availability of an airbridge or steps before deciding what would be the best method to use.
- (d) Specific procedures for alerting of emergency services when an incident occur during routine embarkation/disembarkation of passengers and when passengers are on board and the aircraft is parked.
- (e) Emergency procedures for the rapid disembarkation of occupants of an out of service aircraft should the need arise.

4.11 Passenger Briefings

4.11.1 Training and practice is to be given in the pre-flight briefing of passengers in normal and emergency situations, including landings, ditching, demonstrating the brace position and the briefing of able-bodied passengers on how to operate the emergency exits.

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4.11.2 Briefings are to be given in English, and in any other language where passenger demography so require.

4.11.3 Training should also be given for the conduct of pre-flight safety briefings to handicapped passengers.

4.12 Cabin Baggage and Cabin Clutter

4.12.1 Cabin crew are to be instructed that cabin baggage, service items and other objects are only to be stowed in approved areas such that they are restraint against forward, lateral and vertical movement. They must not be stowed in such a way as to obstruct or damage emergency equipment or exits. Training is to include the areas of the cabin that are approved for the stowage of cabin baggage or other items and the areas where it would be unsafe to do so.

4.13 Brace Positions

4.13.1 Training and practice is to be given in the correct brace positions for both crew and passengers. Such training must take into account different seating configurations and orientation.

4.14 Evacuation Procedure and Emergency Situations

4.14.1 Emergency evacuation is to include the recognition of particular types of emergency situations. Cabin crew will also need to recognise when exits are unusable or when evacuation equipment is unserviceable and to act accordingly to overcome these problems. Circumstances might arise, such as the incapacitation of the flight crew, where these drills need to be initiated by cabin crew.

4.14.2 Cabin crew are also to be trained to deal with the following specific emergency situations:

- (a) an unremediated emergency on take-off or landing and ditching;
- (b) an in-flight fire, with particular emphasis on establishing the fire source;
- (c) sudden decompression, including the donning of portable oxygen equipment; and
- (d) severe turbulence

4.15 Crowd Control

4.15.1 Operators are to provide comprehensive training in the practical application of all aspects of crowd control technique in various emergency evacuation situations. Training is also to emphasise the need for cabin crew to be assertive and, at times, aggressive during an emergency evacuation. Scenarios must be as realistic as possible and should include, as a minimum:

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- (a) communications between flight crew and cabin crew and use of all communications equipment, including the difficulties of coordination in a smoke-filled environment;
- (b) verbal commands;
- (c) the physical contact that may be needed to direct passengers out of an exit and on to a slide;
- (d) the re-direction of passengers away from unusable exits;
- (e) the marshalling of passengers away from the aircraft;
- (f) the evacuation of disabled passengers; and
- (g) authority and leadership.

4.15.2 The executive order to initiate an emergency evacuation is to be given by the commander in English (e.g. “Evacuate, Evacuate”). Cabin crew of a particular nationality if carried on board where passenger demography so requires should be able to repeat the evacuation order and commands in their native language if the need arises (e.g. German, French, Italian, Spanish etc).

4.16 Pilot Incapacitation

4.16.1 Where the flight crew consists of only 2 pilots, cabin crew are to be given training in recognising the signs of subtle incapacitation and practise the ways in which they can be of help in the event of pilot incapacitation. The cabin crew should also be taught on the principle of pilot incapacitation drills which will include the following:

- (a) the need to use the pilot’s oxygen equipment;
- (b) fastening and unfastening pilot’s seat harness and, in the case of inertia and harness, locking and unlocking the inertia device; and
- (c) using pilot’s sliding seat mechanism; and “locking” the pilot in his seat rather than on removing him from the seat, which may not in the event be possible.

5 AIRCRAFT TYPE TRAINING – ALL CREW

5.1 General

5.1.1 Operators should ensure that comprehensive training is given on the operating procedures and the location and use of all emergency and survival equipment to be carried on the aircraft, and that all emergency training is related to the aircraft type, series and configuration to be operated. Aircraft type training must be given to all newly employed crew and to those who are converting to a new aircraft type.

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Note: The actual use of safety equipment and training of operating procedures need not be repeated for crew who are still currently flying with the operator and have covered the same type of safety equipment and procedures in previous training provided by the operator.

5.2 Emergency and Survival Equipment

5.2.1 Training must be given in the location and use of all emergency and survival equipment together with the relevant drills and procedures. The following must be included:

- (a) emergency exits including its normal operation;
- (b) escape slides and, where non-self supporting slides are carried, the use of any associated ropes;
- (c) life-rafts and slide-rafts, including the equipment attached to and/or carried in the raft;
- (d) life-jackets, infant life-jackets and flotation cots;
- (e) drop-out oxygen and its manual deployment;
- (f) emergency and therapeutic oxygen;
- (g) protective breathing equipment and protective clothing;
- (h) fire extinguishers;
- (i) fire axes;
- (j) portable lights including torches;
- (k) emergency lighting systems, including floor proximity lighting systems;
- (l) communications equipment, including megaphones;
- (m) survival packs, including their contents;
- (n) pyrotechnics;
- (o) first aid kits and their contents;
- (p) toilet compartment smoke detector systems;
- (q) evacuation alarm systems; and
- (r) non-mandatory or special equipment fitted or carried.

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Note: A visit to an actual aircraft to familiarise the crew on the aircraft features and the location and complement of all safety equipment is mandatory prior to commencement of line flying.

5.3 Fire Training

5.3.1 Training must be given in extinguishing a fire, representative of an interior aircraft fire using the relevant type of fire extinguisher carried on the aircraft. Emphasis is to be placed on the characteristics of different types of extinguishers, including their effective range and duration and the effectiveness of their use on differing types of fires.

5.4 Protective Breathing Equipment and Protective Clothing

5.4.1 Crews must be trained in the use of protective breathing equipment and if applicable protective clothing. Donning and wearing of such equipment and clothing should be practised in an enclosed, simulated smoke-filled environment.

6 AIRCRAFT TYPE TRAINING - ADDITIONAL ITEMS FOR CABIN CREW

6.1 Practical Training

6.1.1 The following are the minimum level of training necessary to satisfy the relevant requirements for cabin crew aircraft type training:

- (a) during ditching and evacuation drills, each trainee operates and actually opens all normal and emergency exits; attaches escape slide fittings in their proper places; descends an escape slide from a height representative of the aircraft main deck sill height (not required for subsequent type training unless sill height is significantly higher); locates and operates the megaphone; and removes life-rafts from stowages and positions in the launching area. Additionally, the trainee must demonstrate the ability to locate and remove from stowage the aircraft first aid kits and fire extinguishers;
- (b) each trainee observes a demonstration of an escape rope being used as a means of emergency evacuation; the inflation or release, as applicable, of an escape slide; inflation of a life-raft; the survival equipment contained in the life-raft; the contents of the first aid kits; administering supplemental crew and passenger oxygen by portable equipment;
- (c) each trainee observes a demonstration of the use of each type of fire extinguishers carried on the aircraft on various types of fire including simulated electrical, cabin furnishing and galley fires. The demonstration should also show the effect of misapplication of agents;
- (d) each trainee handles and uses each type of fire extinguisher carried on the aircraft;
- (e) each trainee practices the donning of oxygen masks carried in the aircraft; and

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- (f) each trainee is familiarised with the use of the aircraft public address (PA) and interphone system.

6.2 Pilot Incapacitation

6.2.1 When the aircraft type consists of a minimum crew of only 2 pilots, cabin crew must be given training on the following, specific to the aircraft type:

- (a) use of pilot's oxygen equipment;
- (b) fastening and unfastening pilot's seat harness and in the case of inertia reel harness, locking and unlocking the inertia device; and
- (c) using the pilot's sliding seat mechanism. Training is to be given with the seat occupant simulated physically collapsed. Emphasis to be placed on 'locking' the pilot in his seat rather than removing on him from the seat, which may not in the event, be possible.

6.3 Passenger Briefing on Self Help Exits

6.3.1 Training and practice are to be given to cabin crew on briefing the passengers on the operations of self help exits, applicable to the aircraft type.

6.4 Cabin Baggage and Cabin Clutter

6.4.1 Training is to include the areas of the cabin that are approved for the stowage of cabin baggage or other items and the areas where it would be unsafe to do so.

6.5 Brace Positions

6.5.1 Training and practice are to be given in the correct brace position for both cabin crew and passenger taking into account different seating configurations and orientation applicable to the aircraft type.

6.6 Supernumerary Sectors

6.6.1 On completion of emergency and survival training and prior to operating as a crew member, cabin crew are to operate a minimum of two supernumerary sectors on each aircraft type. The supernumerary cabin crew is required to be additional to the normal crew complement.

Note: The requirements of paragraph 6 above need not be repeated for crew who are still currently flying with the operator and have covered or practiced similar procedures in previous training provided by the same operator.

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7 RECURRENT TRAINING - ALL CREW

7.1 Refresher Training

7.1.1 Operators must ensure that an organised course of refresher training is provided for all crews to prepare for the emergency survival test. Such training will have the additional advantage of allowing crews to discuss recent incidents, difficulties and emergencies which have been experienced. If none have arisen, operators should discuss possible scenarios with emphasis on what actions should be taken. Time must be allocated for this purpose. This discussion is particularly important when cabin crew are assigned to more than one type of aircraft. First aid and aviation security refresher training must also be included.

7.1.2 In addition, the refresher training shall also cover:

- (a) Regulation of the carriage of Dangerous Goods and the handling of Dangerous Goods Incident; and
- (b) Reinforcement of Crew Resource Management.

7.2 The Annual Emergency Survival Test

7.2.1 The Civil Aviation Regulations requires that all crew be tested on aspects of emergency and survival appropriate to the aircraft type to be operated. The maximum period of validity of this test is twelve months. The Eleventh Schedule makes a distinction between tests and practice and operators should apply a similar distinction in their crew training records.

7.2.2 All crew must pass a test on their knowledge of the location and use of emergency survival equipment and the appropriate drills and procedures. The test will be related to the aircraft type and cover every series and configuration. Appropriate written tests are required and must include first aid topics.

7.2.3 To demonstrate their proficiency in carrying out emergency duties, crew should practice - insofar as it is practicable and reasonable to do so-the actual movements and operations assigned to them in evacuation and other emergency drills. The donning of life-jackets, oxygen masks and protective breathing equipment and touch drills for opening emergency exits should be included.

7.3 Periodic Practice

7.3.1 At least once every 24 months aircraft crews are to carry out the following practice:

- (a) the operation and actual opening of all normal and emergency exits used for passenger evacuation;

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- (b) extinguishing a fire, representative of an aircraft interior fire, with each type of fire extinguisher carried on board the aircraft except that, in the case of Halon extinguishers, an alternative extinguishing agent may be used;
- (c) the donning and use of protective breathing equipment by each crew member in an enclosed, simulated smoke-filled environment. The duration should be at least 3 mins; and
- (d) boarding a dinghy or raft from the water whilst wearing a life jacket.

7.4 Security Refresher Training

- 7.4.1 Security refresher training must be conducted for all crew. This is to keep the crew informed on the latest threat and security issues.
- 7.4.2 In addition, the training should also *serve* as a useful feedback session to review the operator's security procedures.
- 7.4.3 The syllabus for this training is in Appendix I

7.5 Dangerous Goods Refresher Training

- 7.5.1 Operators must provide refresher training in Dangerous Goods for all crew. The required training contents are shown in Appendix J
- 7.5.2 Operators must ensure that all its crew members have passed a written test once every 24 months on Dangerous Goods prior to operating as a crew member.

8 RECURRENT TRAINING -ADDITIONAL ITEMS FOR CABIN CREW

8.1 The Annual Emergency Survival Test

- 8.1.1 Cabin crew should show a satisfactory knowledge of crowd control techniques, and if applicable, their role in the event of pilot incapacitation. Cabin crew should also undertake first aid refresher training and pass an appropriate written test.

8.2 Periodic Practice

- 8.2.1 Once every 24 months, cabin crew are to demonstrate their competence in carrying out the following practical drills:
 - (a) use of an emergency evacuation slide representative to the highest of the aircraft main deck sill height operated by the cabin crew;
 - (b) use of each type of extinguishers carried on board the aircraft;

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- (c) practical rescue breathing and cardiopulmonary resuscitation using a dummy specifically designed for the purpose; and
- (d) boarding a slide raft/life raft with a life jacket.

9 CREW-IN-CHARGE (CIC) TRAINING

9.1 Initial Training

9.1.1 All newly appointed CIC should be given training on the following topics:

- (a) items to be covered at pre-flight briefing:
 - (i) allocation of cabin crew stations and responsibilities;
 - (ii) aircraft type and equipment fit;
 - (iii) area, route and type of operation; and iv) any special category passengers such as infants, disabled or stretcher cases, etc.
- (b) co-operation with the crew:
 - (i) discipline, responsibilities and chain of command;
 - (ii) importance of co-ordination and communications; and
 - (iii) action in the event of pilot incapacitation.
- (c) review of legal and operator's requirements pertaining to cabin safety:
 - (i) passenger safety briefing, safety cards;
 - (ii) securing of galleys;
 - (iii) stowage of cabin baggage;
 - (iv) restrictions on use of portable electronic device;
 - (v) procedure during turbulence;
 - (vi) procedures when refueling with passengers on board; and
 - (vii) documentation.
- (d) Human Factors and Crew Resource Management, including participation in flight simulator LOFT exercise if practicable;

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- (e) accident and incident reporting;
- (f) flight and duty times limitations and rest requirements;
- (g) safety on the ramp;
- (h) aircraft diversion involving emergency first aid cases;
- (i) minimum equipment list; and
- (j) aviation security matters.

9.2 Refresher Training

9.2.1 In addition to the normal recurrent training, CIC should also be given annual training in the management of the following scenarios:

- (a) planned crash/ditching;
- (b) unruly passengers;
- (c) crew incapacitation;
- (d) emergency first aid cases;
- (e) in-flight cabin fire;
- (f) ramp safety;
- (g) dangerous goods incidents; and
- (h) Aviation Security matters.

9.2.2 The CIC refresher training shall also include topics covered during the CIC initial training. All topics shall be reviewed once every 2 years during the refresher training.

10 APPROVAL OF AIRCRAFT EMERGENCY TRAINING APPARATUS AND OF PERSONNEL CONDUCTING TRAINING AND TESTING OF SUCH APPARATUS

10.1 Operators may wish to conduct some of their emergency training and testing on training apparatus rather than on the actual aircraft, in accordance with THE Civil Aviation Regulations. Where this is the case, the apparatus and the persons controlling the apparatus must be formally approved by the Authority.

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- 10.2 Operators wishing to obtain approval for their apparatus and personnel to conduct training and testing should apply to the Authority. Upon satisfactory conclusion of the inspection, an approval will be issued. Renewal of the approval will be by similar inspection. The period of validity for the approval shall be 12 months.
- 10.3 If approval is sought for the apparatus to be used, all practical emergency survival training and testing, the apparatus will need to meet all the items in paragraph 10.4. However, approval may be sought and given for limited use of apparatus, in which case only the relevant items need to be met.
- 10.4 Subject to the proviso in paragraph 10.3, the apparatus should accurately represent the aircraft in the following particulars:
- (a) layout of the cabin in relation to exits, emergency exits, galley areas and safety equipment stowage. Dimensions should be an accurate representation typical of aircraft in the fleet;
 - (b) both cabin crew and passenger seat positioning -with particular accuracy where these are immediately adjacent to exits;
 - (c) seat dimensions and seat pitch;
 - (d) operation of exits and emergency exits in all modes of operation particularly in relation to its method of operation and weight and balance;
 - (e) extent of movement and associated force of all controls for all equipment and services;
 - (f) provision of emergency equipment of the type provided in the aircraft;
 - (g) all cabin markings;
 - (h) all cabin lightings;
 - (i) cabin crew communications equipment and associated control panels;
 - (j) evacuation slides, including normal and standby methods of operation; and
 - (k) height and angle of inflated evacuation slides.
- 10.5 Operators should nominate training personnel to be approved by the Authority for the control of training apparatus. Operators must satisfy themselves that nominated personnel have the qualifications and experience to conduct such training and that they have undergone a period of training which the Authorised Officers may be assigned to observe. All approved training personnel should be mentioned in the company training manual.

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10.6 An operator may arrange to use the apparatus and/or personnel of another operator. A separate approval will be required in such cases. The training given must comply with the training manual and operating procedures of the operator whose crews are being trained and items covered in the apparatus may be restricted, if significant differences of cabin layout and equipment exist.

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CHAPTER 7

CABIN SAFETY

1 CABIN CREW

1.1 Age/Medical Requirements

- 1.1.1 A cabin crew member should be at least 18 years of age and have passed an initial medical examination or assessment and been found medically fit to discharge the duties specified in the operations manual. An operator must ensure that cabin crew members remain medically fit to discharge such duties.
- 1.1.2 The initial medical examination or assessment, and any re-assessment, of cabin crew members should be conducted by, or under the supervision of, a medical practitioner acceptable to the Authority. An operator should maintain a medical record for each cabin crew member.
- 1.1.3 The following medical requirements are applicable to cabin crew members:
- (a) good general health;
 - (b) freedom from any physical or mental illness which might lead to incapacitation or inability to perform cabin crew duties;
 - (c) normal cardio respiratory function;
 - (d) normal central nervous system;
 - (e) adequate visual acuity - 6/9 with or without glasses and free from severe colour blindness which may interfere with the recognition of colour coded cabin signs;
 - (f) adequate hearing;
 - (g) normal weight (i.e. ability to move comfortably down the aisle, single file, facing forward and to be able to exit from the smallest secondary cabin emergency exit);
 - (h) normal function of ear, nose and throat; and
 - (i) normal height (i.e. able to stand in the aircraft, reach safety equipment and open and close overhead bins).

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1.2 Crew-in-charge (CIC)

- 1.2.1 Whenever more than one cabin crew member is carried on a flight, the operator must nominate a crew-in-charge. The CIC will be responsible to the commander for the conduct and co-ordination of the cabin safety and emergency procedures specified in the operations manual.
- 1.2.2 An operator shall not appoint a person to the post of CIC unless that person has at least one year's experience as an operating cabin crew member and has completed an appropriate course of training.
- 1.2.3 An operator shall establish procedures to select the next most suitably qualified cabin crew member to operate as CIC in the event of the nominated CIC becoming unable to operate. Such procedures must be acceptable to the Authority and take into account the cabin crew member's operational experience.

1.3 Cabin Crew Complement

- 1.3.1 Pursuant to the Civil Aviation Regulations, it is incumbent on operators to ensure that passenger-carrying public transport aircraft do not fly with lesser numbers of cabin crew members than the law prescribes. In this regard, an operator shall not operate an aeroplane with a maximum approved passenger seating configuration of more than 19, when carrying one or more passengers, unless at least one cabin crew member is included in the crew for the purpose of performing duties in the interests of the safety of passengers. The required complement specified shall be no less than the following:
 - (a) One cabin crew member for every 50, or fraction of 50, passenger seats installed on the same deck of the aeroplane; or
 - (b) One cabin crew member for each floor level exit for an aircraft with more than one aisle in the cabin; or
 - (c) The number of cabin crew who actively participated in the aeroplane cabin during the relevant emergency evacuation demonstration conducted by the State of Manufacturer during certification of the aircraft.
- 1.3.2 In addition to the required cabin crew complement as calculated in paragraph 1.3.1 above, at its discretion, the Authority may also require an operator to include additional cabin crew members for any flights.
- 1.3.3 The required complement may be reduced as approved by the Authority.
- 1.3.4 When scheduling cabin crew for flights, rostering procedures should take into account the experience of each cabin crew to ensure that there is an even spread of experienced cabin crew members on all flights.

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1.4 Operation on more than one type or variant

1.4.1 Cabin crew may operate up to three aircraft types provided that safety equipment and emergency procedures are similar. Nevertheless, unless subject to the approval of the Authority, cabin crew should not operate on more than one aircraft type as CICs.

1.4.2 For the purposes of paragraph 1.4.1, variants of a particular aircraft type are considered to be different types if they are not similar in all of the following aspects:

- (a) emergency exit operation;
- (b) location and type of safety equipment; and
- (c) emergency procedures.

1.4.3 Factors taken into consideration by the Authority to permit cabin crew to operate up to 3 aircraft types would include but not limited to the following:

- (a) additional training for the CICs.
- (b) a minimum experience level of cabin crew comprising the minimum crew complement.
- (c) restriction of the number trainee cabin crew carried on all flights.
- (d) meeting a recency requirement as agreed with the Authority on all aircraft types.
- (e) no change fleet assignment within the same day except for flight disruptions.
- (f) arrangements made for cabin crew to review the characteristics of the aircraft type to be operated on during pre-flight crew briefing e.g. viewing of a video tape.

1.5 Recency

1.5.1 The operator shall ensure that any cabin crew member who has not operated as a cabin crew for more than sixty days not exceeding 6 months completes approved course refresher training and pass a written test. The training shall include at least the requirement listed in paragraph 1.6 of this chapter.

1.5.2 The operator shall ensure that any cabin crew member who has not operated as a cabin crew for more than six months not exceeding 12 months before undertaking duties shall:

- (a) complete refresher training on the type;
- (b) sit for and pass all initial and appropriate aircraft type tests; and

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- (c) operate 2 sectors as supernumerary crew. The supernumerary cabin crew should not be counted as part of the minimum crew complement.
- 1.5.3 An operator shall ensure that any cabin crew who has not operated an aircraft for more than 12 months be required to complete the full initial and aircraft type rating training and pass all appropriate tests. The crew must also operate at least 2 sectors as supernumerary crew.
- 1.5.4 The cabin crew recency on an aircraft type will expire if the cabin crew does not operate on an aircraft type for more than 90 days. The crew member will have to successfully complete the aircraft type test before resuming flying duties on that aircraft type.
- 1.5.5 For cabin crew operating on 3 aircraft types, the recency on an aircraft type will expire if he or she does not operate on an aircraft type for more than 60 days. However, the recency requirement can be extended to 90 days if the cabin crew has within the 60 days operated on an aircraft type built by the same manufacturer where similar features exist. The crew member will have to successfully complete the aircraft type test before resuming flying duties on an aircraft type.
- 1.5.6 CICs will be required to undergo the CIC recurrent training programme in addition to paragraph 1.5.2 and 1.5.3 of this chapter.
- 1.6 Refresher Training**
- 1.6.1 The operator shall ensure that a suitable qualified person is employed to conduct the refresher training. The training for each cabin crew member should include at least the following:
- (a) emergency procedures including pilot incapacitation;
 - (b) evacuation procedures including crowd control techniques;
 - (c) operation and actual opening of all normal and emergency exits for passenger evacuation in an aircraft or approved training device;
 - (d) demonstration of the operation of all other exits; and
 - (e) location and handling of emergency equipment, including oxygen systems, portable oxygen, protective breathing equipment and the donning of life-jackets.
- 1.7 Supernumerary Flying**
- 1.7.1 Unless otherwise agreed by the Authority, cabin crew will normally be expected to fly in a supernumerary role on a passenger flight within a period of two weeks on successful completion of their aircraft type training. This is prior to operating as a fully qualified crew. In addition, cabin crew undergoing initial training is also required to operate successfully a minimum number of consecutive sectors as

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supernumerary crew as agreed by the authority on each aircraft type prior to operating as a fully qualified crew. Passengers may not be able to distinguish between such trainees and fully trained cabin crew and in an emergency may expect to receive guidance and assistance from anyone wearing a crew uniform. Operators must therefore ensure that before undertaking supernumerary duties, cabin crew have successfully completed the training and testing specified in paragraphs 3,4,5 and 6 of Chapter 6. The supernumerary cabin crew should not be counted as part of the minimum crew complement.

1.8 Uniforms

- 1.8.1 Operators should provide crew uniforms which readily distinguish the wearer as a member of the cabin staff.
- 1.8.2 Protective clothing for at least two crew members, such as a quick donning jump suit manufactured from a non-thermoplastic material, should be provided for aircraft being operated in a combined passenger and cargo role.
- 1.8.3 Operators should exercise care in the provision of cabin crew footwear. Appropriate footwear should be worn during take-off, landing and emergency situations to avoid damage to slides and to offer protection to the cabin crew.
- 1.8.4 All ornaments worn around the neck and unconcealed by clothing have the potential to snag and hamper movement. These items be a cause of injury to the wearer. Both the restriction of movement and the risk of injury that may occur when neck chains are worn have the potential to inhibit crews from carrying out their duties. Operators must therefore instruct crews to remove unconcealed neck ornaments when on board aircraft. If there is a requirement that ID cards must be displayed, other forms of attachment must be used, care being taken to ensure that this does not present a risk of snagging.

1.9 Operations Manual (SEP)

- 1.9.1 On each flight, every cabin crew must have access to a copy of every part of the operations manual (SEP) which is relevant to his duties on the flight.

2 CABIN SAFETY MANAGEMENT

2.1 Pre-departure Procedures

- 2.1.1 Operators should establish check-in and boarding gate procedures and, where applicable, training for their traffic staff and handling agents. Emphasis should be placed on the need for these personnel to identify and resolve potential difficulties in seat allocation (see also paragraphs 2.2 and 2.3 of this chapter), excess cabin baggage, the carriage of dangerous goods, drunken or unruly passengers, including boarding refusal, before passenger embarkation begins. This is of particular importance at overseas departure points.

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2.1.2 Similar instructions and training should also be given to cabin crew to deal with cabin safety related problems which may have been missed at check-in.

2.2 **Seat Allocation**

2.2.1 The following types of passengers should not be seated where they could obstruct floor level emergency exits, impede the crew in their duties, obstruct access to emergency equipment or hinder aircraft evacuation:

- (a) handicapped people, including the blind and deaf. (The total number of handicapped passengers to be carried should not normally be more than the total number of floor level exits).
- (b) elderly or frail person who appear to be not capable of operating or assisting with the operation of exit;
- (c) accompanied and unaccompanied children and infant;
- (d) deportees or prisoners in custody; and
- (e) obese passengers.

2.2.2 Handicapped passengers should be seated in pre-assigned location designated by the operator and agreed by the Authority.

2.3 **Seat Allocation at Self-Help (Types III and IV) Exits**

2.3.1 Seats which form the access route from the cabin aisle to these exits should only be allocated to passengers who appear capable of operating and/or assisting with the operation of the exit. Check-in staff shall be mindful of this requirement.

2.3.2 On no account should the types of passengers listed in paragraph 2.2.1 be allocated seats which form the access route from the cabin aisle to these types of exit. Preference should be given, where possible, to seating nonoperating crew at these locations.

2.4 **Drunken Passengers**

2.4.1 Regulation 71 of the Civil Aviation Regulations states that “no person shall be in a state of drunkenness whilst in an aircraft”.

2.4.2 Operators are to provide instructions, advice and training to all relevant staff on dealing with passengers who have been drinking excessively. Such advice should include when to deny boarding rights and reiterate the commander's prerogative to exercise the powers, as conferred by the Civil Aviation Regulations, to protect the safety of the aircraft and passengers.

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2.4.3 Drunken passengers constitute not only a possible source of annoyance to fellow passengers but also a hazard to flight safety. Potentially hazardous incidents should be reported in the incident occurrence report.

2.5 Stowage of Cabin Baggage

2.5.1 Cabin baggage may only be stowed in approved locations. Operators should provide clear and unequivocal advice on which areas are approved.

2.5.2 Overhead lockers and other stowages must be clearly placarded with weight limitations and enclosed by latched doors or load bearing nets as appropriate. Cabin crew must be made aware of the need to ensure that limitations are not exceeded.

2.5.3 Underseat stowages may only be used if the seat is equipped with a restraint bar and the baggage is of a size to fit under the seat.

2.5.4 Baggage must not be stowed in toilets, immediately forward or aft of bulkhead or in such a manner that it will impede access to emergency equipment. Particular attention must be paid to maintaining the integrity of all evacuation routes.

2.6 Stowage of Catering Supplies and Crew Effects

2.6.1 All catering supplies, blankets, pillows, newspapers, etc are to be securely stowed in approved areas for take-off and landing.

2.6.2 Similarly, crew effects, including baggage and clothing, must be stowed in approved areas. Particular care must be taken to ensure that doors and exits, including operating handles, are not obstructed nor ready access to emergency equipment precluded.

2.7 Carriage of Aerosols

2.7.1 Advice and instructions should be provided to crew on the carriage of aerosols. In particular, the potential fire hazard posed, and how this may be obviated by careful stowage should be emphasised.

2.7.2 Unless it is unavoidable, aerosols should not be used for dispensing air fresheners, insecticides or other similar agents.

2.8 Portable Electronic Devices (PED)

2.8.1 The operator shall not permit any person to use, and take all reasonable measures to ensure that no person does use, on board an aircraft, a portable electronic device that can adversely affect the performance of the aircraft's systems and equipment.

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2.8.2 There have been evidence that navigation equipment may be affected by interference from passengers' portable electronic devices such as mobile phones. Cabin crew should ensure that PED are switched off during take-off and landing. Cabin crew must also be familiar with the type of PED that are allowable for use during cruise. At the request of the commander, cabin crew may be required to check the cabin for portable electronic devices being used by passengers.

2.9 Spillage of Drinks in flight deck

2.9.1 There is an obvious potential for a major incident to occur when such items as conductive liquids in open containers, cutlery, etc; are mishandled on aircraft flight decks. All operators are requested to review their procedures for handling drinks and other items in and around the flight deck, as appropriate. Clear advice should be given to all crew on how best to route drinks when passing them about, so as to avoid any risk of accidental spillage on to electrical equipment.

2.10 Safety on the Ramp

2.10.1 An operator is required to provide procedures on the following:

- (a) Use of airbridges and other means of embarkation/disembarkation for the purposes of evacuation of passengers.
- (b) Allocation of responsibilities between ground handling agent and cabin crew for passenger safety during embarkation and disembarkation to ensure their individual emergency procedures are compatible and effective.
- (c) Appropriate training must also be provided to all ground staff who are required to operate the aircraft door on the ramp.

3 SAFETY BRIEFING

3.1 Passenger Briefing

3.1.1 Passengers are to be given a pre-departure briefing, without distraction by other cabin activities. The briefing should cover all relevant points appropriate to the aircraft type and operation being undertaken. Briefings are to be given in English, and in any other language where passenger demography so requires. When audio-video presentation is utilised, the audio text is to be in English, with each text accompanied by synchronised sub-titles of the language where passenger demography so requires. The following points must also be highlighted in the demonstration or video:

- (a) seat belt operation;
- (b) location of emergency exits, including any unserviceability;
- (c) life-jacket operation, where required; and

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- (d) operation of drop-out oxygen, where required.

Passengers' attention must be drawn to smoking restrictions; when appropriate, the availability of infant life-jackets or flotation device; the need for children's and babies oxygen masks to be fitted after those of their accompanying elders; and advice on wearing seat belts at all times.

- 3.1.2 The location of floor lighting systems must be included in the briefing and, where possible, the system should be activated for a few seconds.
- 3.1.3 Passenger's attention should be drawn to the safety card and mention made of the instructions for operating any types III and IV exits.
- 3.1.4 Attention should also be drawn to restrictions on the use of personal electronic devices, including mobile telephones. This is to be repeated prior to landing.
- 3.1.5 Where briefings are given by the use of a video presentation, cabin crew must monitor screens to ensure that each passenger receives a full briefing. In larger aircraft, it is preferable that cabin crew should also physically indicate the nearest available exit to the passenger during the briefing. Where passengers have not received, or cannot receive (because of location), a full briefing by video, individual briefings must be given.
- 3.1.6 Operators should ensure that their crew drills include a procedure for passengers to be warned of impact so that they can adopt the brace position at the appropriate time before impact.
- 3.1.7 Special personalised briefings for handicapped passengers (e.g. the blind, the hearing impaired and to a passenger who is responsible for another person on board (e.g. infants) should also be carried out).
- 3.1.8 Prior to landing, another passenger briefing must also be carried out to cover the following:
 - (a) carry on baggage stowage compartment;
 - (b) correct seat back and chair table positioning;
 - (c) seat belt requirements; and
 - (d) on flights scheduled for 6 hrs or more, the location of the emergency exits.

3.2 **Passenger Safety Cards**

- 3.2.1 The passenger safety briefing must be supplemented with a pictorial safety notice relevant to the type of aircraft and its safety equipment (passenger safety card). Information contained in the card must be lodged with the Authority.

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- 3.2.2 The card is to be designed and produced as an entity separate from any other literature. It should be located so that the seated passenger can readily see and identify it. A distinctive message that it contains safety information should be placed at the top of the card.
- 3.2.3 Equipment and operating methods should be depicted pictorially, using internationally recognised symbols wherever possible. Any wording should be kept to a minimum.
- 3.2.4 Passenger safety cards must provide the following information:
- (a) seat belts - instructions for fastening, adjusting and unfastening;
 - (b) useable exit location - routes to exits should be indicated for crash landing and ditching. This includes overwing emergency exits where the emergency escape routes from the cabin, via the wing to the ground should also be clearly depicted;
 - (c) exit operation - for all types of exit fitted. Illustrations should depict the operation of the exit with the direction of the movement of handles clearly indicated;
 - (d) use of evacuation slides -depicting the correct method of use, the manual inflation handle and discarding high heeled shoes;
 - (e) brace positions - for all types of seat orientation and pitch in use of the aircraft;
 - (f) oxygen masks -instructions of locating, donning and adjusting the mask; initiating oxygen flow. Instructions should be given that masks should be fitted to children only after their guardians have fitted their own;
 - (g) life-jackets -removal from stowage, removal from container and inflation. The card must show that, excepting children, the life-jackets must not be inflated within the cabin; and
 - (h) life-raft - location, removal, preparation for use; inflation and launching. Launching locations should be indicated.
 - (i) smoking restrictions;
 - (j) seatbacks and trays - upright and stowed for take-off and landing; and
 - (k) emergency floor path lighting systems.

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4 CABIN CREW DUTIES

4.1 Pre-flight Briefings

4.1.1 Cabin crew should be given a safety briefing prior to the commencement of any flight or a series of consecutive flights, after each full rest period. Consideration should be given to the following:

- (a) areas dedicated to pre-flight briefings usage that afford privacy should be provided;
- (b) copies of the relevant safety equipment and procedures manual and current safety notices must be available;
- (c) cabin crew should answer satisfactorily at least one question on aircraft safety (emergency drills, safety equipment location and usage) or one on first aid;
- (d) the allocation of cabin crew to specific seats in the passenger compartment, where applicable, should take due account of the need to ensure that no area is devoid of persons who have experience in the conduct of safety-related duties;
- (e) safety reminders that address any recent changes to safety-related issues or any perennial problems should be given; and
- (f) action to be taken by the CIC, if it becomes apparent that any crew member displays inadequate knowledge of safety-related issues.

4.2 Allocation of Cabin Crew Stations

Arrangements should be made, preferably during rostering, to ensure an even spread of experienced cabin crew through the aircraft. CICs should allocate duties and positions on the day with this in mind. The CIC must occupy an approved crew seat for all take-offs and landings.

4.3 CIC Seating

When the assigned crew station of the CIC does not allow immediate access to the flight deck, operators must specify drills which reflect the following:

- (a) the cabin crew seated closest to the flight deck should be responsible for communicating with the flight deck crew in the event of any emergency on take-off or landing; and
- (b) emergency evacuation procedures should require CIC to remain at his or her station and to control and operate the emergency exits.

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4.4 **Checking of safety equipment**

- 4.4.1 Cabin crew operating a flight must ensure all the safety equipment carried on board the aircraft is in working condition and that their location and complement are in accordance with the operations manual. The checking of safety equipment is also to be carried out whenever there is a change of crew.

4.5 **Embarkation and Disembarkation of passengers**

- 4.5.1 Instructions should be available to crews for marshalling of passengers at stations where ground handling staff are unavailable.

4.6 **Arming and Disarming Slides**

- 4.6.1 Slides should be armed as soon as obstructions to their deployment (steps, jetties, etc) are removed and clear. Slides should remain armed after landing until arrival 'on stand'. Crews should be aware of the dangers of accidental deployment.

4.7 **Duties prior to take-off and landing**

- 4.7.1 Each cabin crew member assigned to emergency evacuation duties shall occupy an approved cabin seat in the passenger cabin during take-off and landing. Cabin crew should remain at their stations with their seat belt fastened, except when performing duties related to the safety of the aircraft and passengers.
- 4.7.2 The operator shall not permit a cabin crew seat to be occupied during takeoff and landing by a person other than a functional cabin crew member unless otherwise approved by the Authority.
- 4.7.3 All catering and other equipment shall be stowed prior to take-off and landing.
- 4.7.4 All items of galley electrical equipment should be switched off prior to takeoff and landing.
- 4.7.5 The operator shall ensure that at any time when the aircraft is on the ground, provision for the safety and rapid evacuation of the passengers in an emergency is maintained.

4.8 **Cabin lights and window shades for take-off and landing**

- 4.8.1 The dimming of interior cabin lights particularly when taking-off and landing at night and stowing of passengers window shade in the open position (when applicable) for take-off and landing should be carried out.

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4.9 Refueling operations with passengers on board

- 4.9.1 When operators wish to refuel aircraft with passengers on board, instructions should be issued to crews. Instructions should cover at least the following points:
- (a) aircraft steps and jetties and cabin crew positions;
 - (b) smoking prohibition;
 - (c) briefing to passengers on restrictions on use of electrical equipment, no smoking rule, etc;
 - (d) slide arming and clearance area;
 - (e) ensure seat belt signs are off to facilitate sudden evacuation; and
 - (f) ensure cabin safety lighting is switched on.

4.10 Flight crew and cabin crew liaison

- 4.10.1 Operator's instructions should be clear on the need for good liaison to exist between flight and cabin crew.
- 4.10.2 A means must be established for the conduct of liaison. Such liaison should extend until after the aircraft has arrived at its final destination where, for instance, cabin safety equipment defects may need to be attended to.

5 SAFETY, EMERGENCY AND SURVIVAL EQUIPMENT

5.1 Provision of oxygen equipment

- 5.1.1 The amount of oxygen to be carried and the number of passengers for whom suitable masks must be made available vary with operating altitude, attainable rate of descent and Minimum Safe Altitude (MSA).
- 5.1.2 Information and instructions must be provided by the operator to his operating staff to ensure that flights may be conducted in accordance with the relevant legislation. Any aircraft which is not correctly equipped must be appropriately restricted in its use, e.g. by imposition of operating altitude or route restrictions, until such time as an appropriate scale of oxygen and equipment is fitted or repairs effected.

Note: Information on the dangers of explosion caused by the proximity of any oxygen equipment, including therapeutic oxygen, to any naked flame or incipient fire must be stressed.

- 5.1.3 Where a Pre Recorded Announcement facility is fitted, operators should review post decompression procedures and public address announcements to ensure that

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passengers receive information relevant to the use of the oxygen system as soon as possible after a decompression.

5.2 Re-stowage of oxygen masks

5.2.1 It is recommended that cabin crew do not attempt to re-stow oxygen masks after deployment. Damage to the equipment and possibly cabin crew injury may result. Re-stowage of such equipment should be undertaken by maintenance personnel only.

5.3 Portable protective breathing equipment

5.3.1 Portable Protective Breathing Equipment (PPBE) must be approved by the Authority. Advice on which equipment has been approved may be obtained from the Authority.

5.3.2 PPBE units are to be stowed as close to the crew station as practicable and must be readily accessible. Pre-flight serviceability checks must be carried out.

5.3.3 Operators should ensure that transportation security or any other seals are removed prior to installation on the aircraft.

5.4 Carriage of tropical and polar survival equipment

5.4.1 Details for the carriage of tropical and polar survival equipment may be obtained from the Civil Aviation Regulations.

5.5 Waste Containment

5.5.1 All receptacles for towels, paper and other waste are to be constructed of materials resistant to fire as required by the relevant airworthiness requirements.

5.5.2 Waste bags do not need to be approved by the Authority. It is, however, the responsibility of the operator to control the quality of their waste bags in order that resistance to fire is maintained; the fire containment must be demonstrated a test.

5.5.3 Waste bags may only be stowed in toilet compartments during the final phases of flight, provided that they contain low density waste such as paper and plastic cups.

6 ABNORMAL AND EMERGENCY PROCEDURES

6.1 Turbulence

6.1.1 If turbulence is forecast, the aircraft commander should brief the CIC prior to departure.

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6.1.2 When turbulence is encountered, the commander should direct appropriate action via the CIC.

6.1.3 If in-flight service is to be discontinued, whenever possible, without imperiling personal safety, cabin crew should undertake to ensure that service equipment are secured and passengers are seated with their seatbelts fastened.

6.1.4 Cabin crew should take their seats and fasten their seat harness as soon as possible.

6.2 Cabin Fires

6.2.1 Cabin crew must continually survey the aircraft cabin and galley areas for potential and existing fires.

6.2.2 Additionally, a frequent check of toilet areas must be undertaken, ensuring in particular that smoke sensors remain unblocked.

6.2.3 On detecting a fire and/or smoke, the flight crew must be informed immediately of its location, source and severity and be kept informed as the situation develops.

6.2.4 After a fire has been extinguished, the area around it must be monitored for potential re-ignition.

6.3 Oven Fires

6.3.1 Oven fires can be caused by a variety of factors, and the dangers of which would be minimised by thorough inspections of ovens both for cleanliness and for the presence of foreign objects.

6.3.2 The primary hazard from an oven fire occurs when the door of a heated oven is opened. The introduction of outside oxygen can cause a flash fire. In dealing with an oven fire or oven overheat, the following procedure are recommended:

- (a) isolate the electrics and keep the door closed. In most incidents, the fire will self-extinguish;
- (b) monitor the situation. Have a fire extinguisher, fire gloves and protective breathing equipment (PPBE) at hand; and
- (c) if the situation worsens, or it is thought that fire still exists in the oven, open the oven door just enough to insert the nozzle of the fire extinguisher. Insert the nozzle of the fire extinguisher and discharge a small amount of the extinguishant; consideration should be given to donning PPBE and fire gloves prior to opening the oven door. Close the oven door and monitor the oven. Repeat this procedure if necessary.

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6.4 **Precaution on the use of therapeutic oxygen**

- 6.4.1 The use of therapeutic oxygen whilst fire-fighting is extremely hazardous since therapeutic oxygen may itself feed the fire, thus resulting in severe injuries to the crew member wearing the equipment. Additionally, therapeutic oxygen equipment only provides a low supplemental oxygen flow which will afford little relief in a smoke-laden atmosphere.

6.5 **Pressurised Cabins – Use of Exits**

- 6.5.1 Problems can occur if an exit is forced open when the aeroplane has not been fully depressurised. The exit will rapidly open, with the associated danger that the person operating the exit may be ejected from the cabin with possible serious consequences. Residual pressurisation may result from system malfunction or incorrect application of procedures.
- 6.5.2 Prevention of accidents and incidents involving aeroplane pressurisation requires correct actions to be taken by both flight deck crew and cabin crew. Operators are required to ensure flight deck crew and cabin crew are able to recognise any indication that the aeroplane is pressurised and that any attempt to open the exits should only be made when complete depressurisation has been achieved. Indication of a pressurisation problem might be evident by system design or by abnormally high operating loads on the exit handle.

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CHAPTER 8

ARRANGEMENTS FOR ENGINEERING AND MAINTENANCE SUPPORT

1 GENERAL

- 1.1 This Chapter prescribes the requirements for the operator's arrangements for engineering and maintenance support for aircraft covered by the AOC. The arrangements should commensurate with the number, type and complexity of the aircraft and the area and type of operations.

Note: (1) Other requirements may be specified for operators whose operations are of a limited nature and scope.

- (2) Alternative arrangements may be permitted for some engineering functions to be undertaken by other organisations. This will depend on the organisation being approved for the purpose and being of an equivalent standard to that specified herein, and on the establishment of a system of management control by the operator to ensure that proper co-ordination and control exists over the planning and conduct of all work undertaken on his behalf.

2 ENGINEERING EXPOSITION DOCUMENT

- 2.1 The operator shall describe the maintenance arrangements to support his operation in accordance with the requirements of this Chapter in the Engineering Exposition Document. The operator shall ensure that the Engineering Exposition Document is amended as necessary to keep the information contained therein up-to-date. The contents of the exposition shall address all of the subjects included in this Chapter, and in particular:

- (a) a description of the administrative arrangements between the operator and the maintenance organisation, if engineering and maintenance support is contracted out;
- (b) a description of the maintenance procedures and the procedures for completing and signing of certificates of maintenance review and release to service when maintenance is not subcontracted out;
- (c) names and duties of the person or persons required by paragraph 4.1 of this Chapter;
- (d) a reference to the maintenance schedules required by paragraph 8.2 of this Chapter;

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- (e) a description of the methods used for the completion and retention of maintenance records required by Regulation 84 of the Civil Aviation Regulations and 8.13 of this Chapter;
 - (f) a description of any reliability or condition monitoring programme and any associated reporting procedures required by paragraph 8.4 of this Chapter;
 - (g) a description of the procedures for assessing continuing airworthiness information and implementing and resulting actions as required by paragraph 8.14 of this Chapter;
 - (h) a description of the procedures for implementing action resulting from mandatory continuing airworthiness information;
 - (i) a description of establishing and maintaining a system of analysis and continued monitoring of the performance and efficiency of the maintenance schedules, in order to correct any deficiency in the schedules;
 - (j) a description of aircraft types and models to which the Engineering Exposition Document applies;
 - (k) a description of procedures for ensuring that unserviceabilities affecting airworthiness are recorded and rectified;
 - (l) a description of the procedures for advising the Authority of significant in-service occurrences as required by paragraph 8.6 of this Chapter;
- 2.2 The exposition and subsequent amendments shall be submitted to the Authority for approval.
- 2.3 Copies of all approved amendments to the Engineering Exposition Document shall be furnished promptly to the Authority and all organisations or persons to whom the manual is issued.

3 ENGINEERING AND MAINTENANCE SUPPORT

- 3.1 The operator is responsible that maintenance on his aircraft are performed in accordance with the Mauritius Civil Airworthiness Requirements and that the aircraft are maintained in an airworthy condition. The operator shall also ensure that the Certificate of Airworthiness of each aircraft remains valid.

Note: General requirements for aircraft maintenance, including the operator's responsibilities, are in the Mauritius Civil Airworthiness Requirements Section 4

- 3.2 The operator shall satisfy the Authority that the engineering and maintenance support arrangements (i.e. the personnel, accommodation, equipment and facilities, organisations, procedures and documentation provided for the engineering and

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maintenance support of the aircraft covered by the AOC) are to a satisfactory standard. The operator may have his own maintenance organisation or may contract out his maintenance to another maintenance organisation approved by the Authority in accordance with MCAR-145. If the operator carries out maintenance of his own aircraft, he shall with comply with the provisions of theMCAR-145.

- 3.3 The operator remains responsible for the safe operation of his aircraft when the accomplishment of maintenance is contracted out and must therefore be satisfied with the standards of airworthiness achieved by the maintenance contractor. The operator shall monitor the maintenance contractor's response to the provisions of the maintenance agreement, employing such technical resources as are necessary to achieve this task.
- 3.4 Maintenance support arrangements shall be based on an organisation approved by the Authority under the MCAR-145 for the maintenance or overhaul of the type of aircraft concerned.
- 3.5 For the purposes of the AOC, maintenance is taken to include the overall control of airworthiness and the accomplishment of scheduled and unscheduled servicing and inspection tasks.
- 3.6 The operator shall have management systems to ensure effective engineering support of his fleet of aircraft over the whole of the routes operated. Quality control and assurance shall be exercised as necessary to achieve satisfactory standards of continuing airworthiness.

4 PERSONNEL

- 4.1 The Chief Executive of the operator shall nominate the following persons for the Authority's acceptance:
 - (a) A senior person acceptable to the Authority, who is directly responsible to the Chief Executive for the co-ordination of all departments concerned to ensure that the administration and control of all activities and the arrangements for engineering and maintenance support for aircraft covered by the AOC are in compliance with the Civil Aviation Regulations, the Air Operator Certificate Requirements, the Mauritius Civil Airworthiness Requirements and any other requirements that the Authority may stipulate from time to time, and in accordance with the Engineering Exposition Document. This person shall be authorised to liaise directly with the Authority on all matters affecting airworthiness.
 - (b) Heads of department and other senior members of the staff as appropriate to the activities of the organisations.
 - (c) A person nominated to authorise appropriately qualified persons to be signatories of relevant certification documents.

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- 4.2 These nominated persons shall be capable and responsible persons who are conversant with the Civil Aviation Regulations, the Air Operator Certificate Requirements, the Mauritius Civil Airworthiness Requirements and the relevant Annexes to the Convention on International Civil Aviation, and have adequate qualifications and experience for the duties concerned.
- 4.3 The staff in all appropriate technical departments shall be of sufficient number, and shall have the training, competency and experience as may reasonably be expected to undertake the volume and type of work for which approval is sought.
- 4.4 The set up of the organisation shall be such as to ensure that in all matters affecting airworthiness, full and efficient co-ordination exists within departments, between related departments, and with external agencies.
- 4.5 All staff, including holders of Aircraft Maintenance Engineer licences, who are required to issue Certificate of Maintenance Review and Certificate of Release to Service shall be authorised by the person nominated to do so under the approval.
- 4.6 Persons authorised by the person nominated to do so under paragraph 4.1(c) shall be provided with copies of their approvals, preferably in card or booklet form, recording the following details:
- (a) Name of organisation.
 - (b) Holder's name and signature.
 - (c) The DCA Approval reference number of the organisation and the holder's individual approval number.
 - (d) Details of the aircraft, engines, systems, equipment and maintenance tasks for which approvals have been granted, the scope of each approval and its date.
 - (e) A statement of any conditions of issue, including a statement to the effect that such approval is valid only so long as the holder is in organisation's employment.
- 4.7 Personnel records shall be kept, clearly indicating the basis upon which approvals have been granted. The records shall also include details of any Aircraft Maintenance Engineer licence held, training satisfactorily completed and the result of any written or oral assessment by the person responsible for granting the approval.

5 STAFF STRENGTH

- 5.1 The operator shall ensure that there is a sufficient number of staff, including qualified maintenance personnel to meet the demands of his operations. The operator shall ensure that support appropriate to his route pattern, transit frequency and maintenance requirements are provided at main bases and route stations.

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- 5.2 Shift duty periods shall be adequately staffed to effectively enable scheduled and unscheduled tasks to be performed. Adequate staff shall be made available to perform tasks of airworthiness significance in a proper manner. Company policies in respect of maintenance personnel duty periods should be made known to the Authority.
- 5.3 The operator shall ensure that licensed and approved personnel are appropriately qualified to perform the tasks required, including the issue of Certificates of Maintenance Review and of Certificates of Release to Service for Scheduled Maintenance Inspections and the rectification of defects.
- 5.4 If maintenance support is contracted out, the operator shall ensure that the maintenance contractor meets the requirements of this paragraph.

6 STAFF STANDARDS AND TRAINING

6.1 General

- 6.1.1 The operator shall satisfy the Authority that its staff are adequately qualified. The operator shall provide adequate training facilities of its own or make contractual arrangements for such training using external sources to the satisfaction of the Authority.
- 6.1.2 Support appropriate to the route pattern transit frequency and maintenance requirements of the operator shall be provided at main bases, operational bases and route stations.

6.2 Scope of Training

- 6.2.1 Training shall be provided for those management, supervisory and quality personnel who are responsible for supervising the engineering support for the aircraft type(s) included in the AOC and for issuing the relevant Certificates of Release to Service and Certificates of Maintenance Review. Course syllabi shall include formal instruction and practical experience.
- 6.2.2 The number of supervisors, inspectors, quality engineers and mechanics to be trained before the introduction of a new type of aircraft into service shall take into account the complexity and numbers of the type, the anticipated pattern of aircraft utilisation and the organisation's previous experience of aircraft with similar characteristics.
- 6.2.3 An adequate number of mechanics shall receive aircraft and systems familiarisation training on the particular aircraft types and on related maintenance practices. Mechanics to be granted limited inspection approval shall be given specific training appropriate to that approval and to the satisfaction of the Quality Manager.
- 6.2.4 Provisions shall be made for continuation training in accordance with a programme acceptable to the Authority.

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- 6.2.5 The operator shall ensure that a programme of training is available to ensure that:
- (a) All maintenance personnel are adequately trained to perform the duties required of them.
 - (b) Personnel required to issue Certificates of Maintenance Review and Certificate of Release to Service receive familiarisation training on the aircraft type and instruction in the correct operation of the operator's airworthiness control procedures to enable them to perform these tasks on the type of aircraft for which support is being provided.
 - (c) Persons contracted to perform line maintenance tasks through maintenance agreements are trained in any significant differences which exists between the operator's aircraft and that which they are normally employed to maintain together with any relevant company procedures they are required to observe.
 - (d) Personnel engaged in maintenance-related tasks receive continuation training covering any changes to the aircraft and its maintenance, taking into account the result of in-service experience gained by the operator and that published by the aircraft, engine and equipment manufacturers. Attention shall also be paid to changes in company procedures, the Civil Aviation Regulations and requirements of the Authority.
 - (e) Personnel engaged in maintenance related tasks receive training in human factors.
- 6.2.6 Records shall be maintained of training undertaken by personnel including any results of assessments or examinations.
- 6.2.7 Training shall include formal instruction and practical experience.
- 6.2.8 Management, Quality Assurance and other relevant personnel should be trained in the techniques of maintenance management and the achievement of airworthiness appropriate to the posts held.
- 6.2.9 The number of maintenance personnel, including management, supervisors, quality audit staff and mechanics to be trained before the introduction into service of a new type of aircraft shall be agreed with the Authority. Numbers should take into account the complexity of the aircraft and its systems, the fleet size, the anticipated pattern of aircraft utilisation and the organisation's previous experience of similar aircraft.

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7 CONTRACTED OUT MAINTENANCE

7.1 General

- 7.1.1 The management and accomplishment of engineering and maintenance support may be achieved by the operator using his own or an associated maintenance organisation. Alternatively all or part of the arrangements may be contracted to a separate organisation approved by the Authority.
- 7.1.2 Contracted arrangements for engineering and maintenance support do not absolve the operator from the overall responsibility for ensuring the safe operation and continuing airworthiness of the aircraft.
- 7.1.3 Where the operator does not maintain the aircraft he operates using only his own resources, full detail of the division of responsibilities between the operator and the contracted maintenance organisation must be included in an agreement between the two parties. Matters to be addressed in such an agreement are contained at Appendix G. A copy of the maintenance agreement shall be submitted to the Authority.
- 7.1.4 Where an operator contracts out part or all of the maintenance to a separate organisation, he shall nominate a person for engineering liaison purposes. This person will be responsible to the operator; for planning the timely presentation of the aircraft to the maintenance support organisation for all contracted maintenance; for liaison on all matters relating to the maintenance contract or agreement and for airworthiness matters affecting the safe operation of the aircraft.
- 7.1.5 The operator's representatives shall visit the contracted maintenance organisation at the inception of the agreement, and periodically thereafter, to ensure that the standards agreed are being maintained. Reports of all such visits shall be kept and made available to the Authority on request.
- 7.1.6 An arrangement whereby more than one maintenance organisation is contracted by an operator in respect of the airworthiness control of a particular aircraft type will not normally be acceptable to the Authority other than for maintenance support at route stations or where a distinct division of aircraft is established, e.g. different maintenance schedules apply.
- 7.1.7 An operator may only arrange separately with other contractors apart from the principal contractor for the maintenance, overhaul and repair of engines and other components provided such arrangements do not jeopardise the agreed airworthiness control responsibility of the principal contractor.
- 7.1.8 In order to be able to discharge his responsibilities for continued airworthiness and to issue Certificates of Maintenance Review (CMR) the operator shall ensure on a continuing basis that the requirements of the approved maintenance schedule are being complied with, including condition monitoring and reliability reporting, and be made aware of any significant performance trends.

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- 7.1.9 Responsibilities for the assessment and incorporation of manufacturer's Service Information and for compliance with mandatory requirements shall be clearly defined in the agreement.
- 7.1.10 In its assessment of the overall engineering support arrangements provided by the operator, the Authority may examine or request copies of all agreements, including side letters and addenda, between the parties concerned.
- 7.1.11 The Authority shall be notified at least 40 days in advance of any proposal to change the maintenance arrangements, e.g. a change to another maintenance organisation or significant organisational, procedural or technical change to a maintenance agreement.
- 7.1.12 Arrangements other than in accordance with this chapter will need to be specifically agreed with the Authority.

7.2 Contracting out Full Support

- 7.2.1 The operator may contract full maintenance support to an organisation approved by the Authority in accordance with MCAR-145 for the maintenance or overhaul of the type(s) of aircraft concerned.
- 7.2.2 The operator shall ensure that the maintenance organisation competently discharges its responsibilities under the agreement, to his satisfaction, and is responsible for satisfying the Authority that the organisation meets the requirements of this Chapter insofar as they relate to the contracted work.
- 7.2.3 Written agreements shall be drawn up between the operator and the maintenance organisation to clearly define what responsibility for action is allowed to the maintenance organisation without prior consultation, and what tasks require agreement by the operator.
- 7.2.4 Whenever an aircraft is presented for scheduled or unscheduled maintenance it is essential that a precise indication is given of the inspections required, all defects known to exist on the aircraft plus any additional work required to be carried out (after consultation with the maintenance organisation as necessary).

Note: Operators must appreciate that a maintenance organisation cannot carry out work or certify inspections without their instructions or agreement and it follows that they should be specific when making known their work requirements to the organisation of their choice. Difficulties regularly occur because there is a misunderstanding between customer and maintenance organisation as to the former's requirements.

- 7.2.5 The operator shall ensure that all tasks completed and certificated during line maintenance or by other organisations/engineers be made available to his maintenance contractor.

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7.3 Contracting out Line Maintenance Support

- 7.3.1 Line maintenance is defined as those maintenance activities required to prepare an aircraft for flight including:
- (a) Preflight inspections and servicing.
 - (b) Daily inspections.
 - (c) Minor scheduled maintenance.
 - (d) Defect rectification.
- 7.3.2 A written agreement shall exist between the operator or his principal contracted maintenance organisation and the organisation contracted for the performance of line maintenance, detailing the tasks to be performed on behalf of the operator. The arrangements shall be defined in company instructions so that responsibilities procedures and communication paths are made clear to all concerned.
- 7.3.3 The authorisation of maintenance personnel employed by the line maintenance contractor shall conform to any requirements and limitations imposed by the conditions of the approval granted by the Authority.
- 7.3.4 It is the responsibility of the operator to ensure that the continuing performance of the line maintenance contractor is such as to ensure safe operation of the operator's aircraft.

7.4 Contracting out Ground Handling

- 7.4.1 The operator may enter into Ground Handling Agreements with other organisations for the provision of services associated with aircraft arrival, turnaround and dispatch. In these cases a written agreement shall exist detailing the tasks to be performed on behalf of the operator.
- 7.4.2 The operator shall ensure that maintenance or flight crew personnel responsible for accepting the aircraft for flight are made aware of any matter which is not included in the agreement at that station.
- 7.4.3 The operator shall clearly define the responsibilities for typical matters such as:
- (a) opening and securing of aircraft hold doors: securing and locking when loading is complete;
 - (b) draining of water from aircraft fuel tanks;
 - (c) maintaining communication between flight deck and ground personnel.

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7.4.4 This list is not exhaustive and may vary from operator to operator and station to station. Company instructions to flight crew and maintenance personnel shall identify responsibilities in each case.

7.4.5 It is the responsibility of the operator or his principal maintenance contractor to ensure that the continuing performance of the ground handling contractor is such as to ensure safe operation of the operator's aircraft, and that necessary initial and recurrent training has been performed.

7.5 Contracting out Engine Maintenance

7.5.1 When an operator chooses to contract-out maintenance of engines independently from the overall arrangements existing for maintenance support of the aircraft, the operator shall ensure that the principal maintenance contractor:

- (a) is fully in agreement with the proposed arrangements;
- (b) is kept continuously aware of engine condition monitoring and any adverse trends in reliability or performance which arise, if he is not directly a party to such monitoring;
- (c) is made aware of the status of engines fitted to aircraft in respect of modifications, service bulletins and airworthiness directives;
- (d) liaises with the engine maintenance contractor in respect of the requirements of the approved maintenance schedule for the aircraft so that the engine maintenance reflects the needs of the aircraft for airworthiness.

7.5.2 The operator shall ensure that at all times the liaison between the aircraft and engine maintenance organisations must be such as to enable the appropriately approved person to carry out maintenance reviews and issue the required certificate (CMR) and safely discharge his statutory responsibilities when doing so.

8 AIRWORTHINESS CONTROL PROCEDURES

8.1 General

8.1.1 Procedures described in company manuals and/or required to be provided by this publication shall be published in company documents and made available to staff concerned to ensure that they are aware of the procedures and their own resultant duties and responsibilities.

8.2 Maintenance Schedules -Control and Development

8.2.1 Pursuant to Regulation 17 of the Civil Aviation Regulation, an aircraft shall be maintained in accordance with an approved maintenance schedule.

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- 8.2.2 AOC holders operating foreign-registered aircraft shall provide, for use and guidance of maintenance and operational personnel concerned, a maintenance schedule, approved by the State of Registry, containing the information required by Part I Chapter 11 (Manuals, Logs and Records) of Annex 6 (Operation of Aircraft) to the Convention on International Civil Aviation. The requirements of the maintenance schedule shall be no less stringent than those for the Mauritius-registered aircraft. The operator shall ensure that the maintenance of its aircraft is performed in accordance with the approved maintenance schedule. The operator shall furnish the Authority with a copy of the approved maintenance schedule together with proof of its approval by the State of Registry when applying to include / use a foreign-registered aircraft in his operation.
- 8.2.3 The operator shall provide, for the use and guidance of maintenance and operational personnel concerned, a maintenance schedule containing the information required by the Mauritius Civil Airworthiness Requirements Section 4. The design and application of the maintenance schedule shall observe human factors principles. The operator shall also ensure that the maintenance of its aeroplanes is performed in accordance with the approved maintenance schedule.
- 8.2.4 Two copies of the proposed maintenance schedule must be prepared and submitted for approval to the Authority. When the schedule is approved the applicant will be formally notified by means of a maintenance schedule Approval Document, which also defines the frequency and conditions for issue of Certificates of Maintenance Review and Release to Service for Scheduled Maintenance Inspection (SMI).
- 8.2.5 The operator shall ensure that the approved maintenance schedule is reviewed periodically to ensure that the detailed schedule requirements continue to have practical applicability in the light of experience and adequately meet the maintenance needs of the aircraft if continuing airworthiness in the respective operating circumstances is to be ensured.
- 8.2.6 Reviews shall take account of variations from the original certification standard of the aircraft which may have occurred as a result of modifications and respond to the recommendations of the manufacturer contained in maintenance manuals and Service Bulletins.
- 8.2.7 Changes in the use of aircraft may affect the conditions for approval of the maintenance schedule, for example with respect to annual utilisation, average flight duration and operating environment. Amendments to schedules and to engine maintenance programmes shall be submitted for approval in response to significant changes.
- 8.2.8 A continuous analysis shall be undertaken of defects arising on the aircraft during flight and at maintenance inputs, from technical logs and from worksheets raised during Scheduled Maintenance Inspections, particularly those where major structural inspections are undertaken. Results of the analysis shall be used to amend the maintenance schedule as appropriate to eliminate repetitive defects and trends.

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8.2.9 Maintenance schedule reviews shall take account of the age and utilisation of the aircraft and the continuity of corrosion control programmes. More frequent maintenance may be required as aircraft grow older.

8.2.10 Copies of all approved amendments to the maintenance schedules shall be furnished promptly to the Authority and all organisations or persons to whom the maintenance schedules are issued.

8.3 Certificate of Maintenance Review (CMR)

8.3.1 The CMR signatory is required, before issuing the Certificate to ensure that all maintenance is complete, all mandatory inspections and modifications that are due have been complied with, all defects have been rectified or deferred in accordance with company procedures and that all necessary Certificates of Release to Service have been issued.

8.3.2 The Authority shall have access in respect of the aircraft being certified, to the approved maintenance schedule and check control system, the mandatory inspection/modification control system, the defect control system, all technical records including worksheets, and to aircraft defects. In the case of computer controlled record access must likewise be provided.

8.3.3 Quality Control audit records must be available to the CMR signatory on request relative to the aircraft being cleared such that he may discharge his responsibilities under the Civil Aviation Regulations.

8.4 Defects and Occurrences

8.4.1 An assessment of both the cause and any potentially hazardous effect of defects or combination of defects, and occurrences must be made in order to initiate any necessary further investigation and analysis.

8.4.2 A system of assessment e.g. through reliability programme, should be in operation to support the continuing airworthiness of aircraft and to provide a continuous analysis of the effectiveness of the operator's control systems in use.

8.4.3 The system should provide for the following:

- (a) Significant Incidents and Defects. The monitoring on a continuous basis of incidents and defects that have occurred in flight and of defects found during maintenance and overhaul, highlighting any that appear significant in their own right.
- (b) Repetitive Incidents and Defects. The monitoring on a continuous basis of defects occurring in flight and found during maintenance and overhaul, highlighting any that are repetitive.

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- (c) Deferred and Carried Forward Defects. The monitoring on a continuous basis of deferred and carried forward defects.
- (d) Unscheduled Removals and System Performance. The analysis of unscheduled component removals and of the performance of aircraft systems; and its use as part of a maintenance programme.

8.5 Occurrence Reporting to the Design Organisation

- 8.5.1 The operator shall have procedures for ensuring that the design organisation of each aircraft type (usually the constructor) receives adequate reports of occurrences to that type, to enable it to issue appropriate service instructions and recommendations to all operators.
- 8.5.2 Liaison with the design organisation is necessary to establish whether published or proposed service information will resolve the problem or to obtain a solution to a particular problem.

8.6 Mandatory Occurrence Reporting to the Authority

- 8.6.1 The operator is responsible for Mandatory Occurrence Reporting to the Authority. Details of the requirements for mandatory reporting is in Chapter 4.4 of the Mauritius Civil Airworthiness Requirements.
 - 8.6.2 The operator shall establish procedures to discharge these responsibilities and personnel shall be instructed as to their use.
 - 8.6.3 Mandatory Occurrence Reports shall be made to the Authority through the person authorised under paragraph 8.8.1 of this Chapter.
 - 8.6.4 The operator shall remain responsible for Mandatory Occurrence Reporting even when maintenance is contracted out, both to a local or foreign maintenance organisation.
- 8.7 Other Occurrence Reporting to the Authority
- 8.7.1 The operator shall ensure that such other reporting requirements as are prescribed from time to time are met.

8.8 Coordinating of Occurrence Reporting

- 8.8.1 Responsibility for co-coordinating action on airworthiness occurrences and for initiating any necessary further investigation and follow-up activity shall be assigned to a suitably qualified senior person with clearly defined authority and status.
- 8.8.2 Operational and maintenance reporting may be coordinated by one individual as long as the necessary integration is provided by the organisation.

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8.8.3 A suitably qualified engineer within the organisation shall be assigned responsibility for co-coordinating with the operator's flight operational staff in connection with occurrences which have both airworthiness and operational implications.

8.8.4 This is particularly necessary where the operator contracts out his maintenance, when it must be clearly shown who performs this task in both the Operations Manual and the Engineering Exposition Document.

8.9 Deferred and Carried Forward Defects

8.9.1 The systems for controlling deferred and carried forward defects must be described in the Engineering Exposition Document. When transferring a defect in the Technical Log to the deferred sheets or carrying forward a defect during a maintenance check, the conditions approved by the Authority for the control of deferred defects must be complied with.

Note: (1) Deferred defects are defined as those defects reported in operational service which are deferred for later rectification.

(2) Carried forward defects are defined as those defects arising during maintenance which are carried forward for rectification at a later maintenance input.

8.9.2 There shall be a system to consider the cumulative effect of a number of deferred or carried forward defects occurring on the same aircraft. Any restrictions contained in the Minimum Equipment List must be considered. Deferred defects shall be made known to the flight crew.

8.9.3 There shall be a procedure to ensure that the period for which defects are deferred or carried forward reflects the importance of the defect as it affects airworthiness and/or safe operation. Limitation periods to be applied shall be identified in the Engineering Exposition Document (e.g. flight hours, calendar time, number of sectors, return to base). The control system shall ensure that the number of deferred defects and the length of time during which each defect is deferred are kept to a minimum.

8.9.4 There shall be a procedure to ensure that deferred defects are transferred to worksheets at maintenance periods, and to ensure that deferred defects which have not been actioned during maintenance periods, are re-entered on to a new deferred defect record sheet. The original date of the defect must be retained.

8.9.5 There shall be a procedure to ensure that the necessary components or parts are made available or ordered on a priority basis, and that they are fitted at the earliest opportunity.

8.9.6 There shall be a cross reference in the Technical Log to enable each defect which has been deferred to be traced back to its original entry.

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8.10 Repetitive Defects

8.10.1 There shall be a system to control and monitor repetitive defects on a continuous basis appropriate to the number of aircraft operated and the nature of the operation. The system shall ensure that the history of a particular repetitive defect is not lost at scheduled inspections. A limit to the number of times a particular defect may be repeated shall be established, after which it shall be brought to the attention of a senior person in the Organisation, usually the Quality Manager. This person is responsible for ensuring that positive action is taken to obviate a further repetition of the defect.

8.10.2 Defects shall be recorded in a standardised way to assist in identifying which problems are repetitive. The operator shall ensure that line and outstation maintenance personnel have access to repetitive defect information.

8.11 Instructions to Maintenance Personnel

8.11.1 In addition to the technical and procedural contents of documents such as maintenance manuals and the Engineering Exposition Document prepared by the operator, there is a need for a system of bulletins or instructions with which to advise maintenance personnel of matters of immediate technical importance, and to define company practices where these differ from other published information.

8.11.2 The operator shall ensure that there is a system for publishing instructions which shall be:

- (a) Distributed individually to maintenance personnel or in such a way that each person has access to a copy and there is a record kept to show that he has seen each document issued.
- (b) Numbered sequentially and dated. Where instructions are revised an issue or revision number must be shown.
- (c) Identified as to content, e.g. by ATA Chapter or by aircraft type number so as to permit easy access to particular subjects.

8.11.3 The principal source of matters to be addressed by the issue of instructions is expected to be the in-service experience of the aircraft being operated and maintained, to which the maintenance organisation finds a need to respond with guidance to maintenance personnel. Other sources of information include DCA Airworthiness Notices, in-service experience reports and similar continuing airworthiness information published by airworthiness authorities and manufacturers.

8.11.4 Where instructions are issued which conflict with, or vary, information published by manufacturers or other sources it must be clearly shown which information takes priority. It must also be ensured that instructions cannot be construed as overriding published mandatory information or concern matters beyond the scope of the approval held by the organisation.

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8.12 Technical Records

8.12.1 There shall be a department responsible for the compilation and co-ordination of technical records. It shall maintain a data recording system:

- (a) Such that it is possible to ensure that the hours of service or elapsed times quoted in the approved maintenance schedule are not exceeded as regards components and structural assemblies, and that scheduled maintenance periods are adhered to.
- (b) To record the number of landings, flights or cycles, and the use of maximum contingency or intermediate contingency power, when this information is specified in the approved Maintenance Schedule or manufacturer's manuals as a basis for inspection or other necessary action.
- (c) To process the foregoing information into aircraft, engine and propeller log books or equivalent records, to maintain the records and documents concerning overhaul and repair work, component changes, mandatory modifications and inspections and to maintain the Modification Record Book.
- (d) To maintain records required by the Mauritius Civil Airworthiness Requirements Section 4.

8.12.2 A computer may be used as part of a technical records system with the agreement of the Authority. In this case procedures should be instituted which will ensure that the computerised record will provide security, storage, preservation and retrieval to the same level as would have been achieved by hard copy records. The Authority's acceptance of computerised recording does not exempt the operator or his contracted maintenance organisation from complying with the appropriate provisions of the Civil Aviation Regulations for the keeping and retention of records.

8.12.3 Records shall be structured or stored in such a way as to facilitate auditing.

8.13 Documentation for Maintenance Checks

8.13.1 The department responsible for technical records shall also be responsible for the accuracy of the documents issued for a maintenance check and shall maintain a procedure to ensure that only documents incorporating the latest amendments are issued, and that all superseded documents are withdrawn and cancelled. Working documents made available for use by maintenance staff such as worksheets or cards shall include:

- (a) A list of inspections, checks or work items required to meet the requirements of the approved maintenance schedule and adequate directions for their implementation.

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- (b) The part numbers and serial numbers (unless not relevant to component control) of all components to be removed and replaced, and their locations on the aircraft.
- (c) Details of any modifications which have to be incorporated during the check.
- (d) Any mandatory or special inspections, or any other checks which are required to be made by the company in addition to those required by the approved maintenance schedule.
- (e) Detailed procedures for engine runs, power unit or propeller change, fuel flow tests, duplicate inspection of controls, landing gear retraction tests etc., as applicable.
- (f) A list of outstanding deferred and carried forward defects.

8.13.2 Additional worksheets or cards shall be provided for recording the work completed as a result of the maintenance check and any defects arising from inspections.

8.13.3 All worksheets or cards shall be readily identifiable and shall bear an issue number. They shall also be identified to associate them positively with the relevant items in the maintenance schedule. The procedures for documentation control shall ensure that if any worksheet or card is mislaid or lost this will be readily apparent on completion of the check, and that each 'pack' of worksheets or cards is complete and certified before the aircraft is released for service.

8.13.4 Before issue, all worksheets or cards must be recorded on a 'work pack control' sheet which shall also state the following:

- (a) Name and DCA Approval reference of the maintenance organisation.
- (b) Aircraft type and registration marks.
- (c) The maintenance check to be carried out.
- (d) The date.
- (e) The approved maintenance schedule reference number and amendment state.
- (f) The name of the operator.

8.13.5 Technical records are deemed to be essential records and may not be destroyed without permission from the Authority.

8.13.6 The compilation of maintenance check documentation may, alternatively, be allocated to a maintenance planning department, subject to the agreement of the Authority. In such cases the company Engineering Exposition Document must contain details not only of the procedures of the planning department through which the documentation is compiled but also of the monitoring programme exercised by Quality Assurance.

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8.14 Airworthiness Directives and Manufacturers Technical Information

8.14.1 The operator shall have procedures and the necessary personnel to ensure that Airworthiness Directives are complied with as required. It must be clear, when maintenance is in any way subcontracted, that responsibility for compliance with mandatory airworthiness information such as Airworthiness Directives lies with the operator.

8.14.2 When assessing the overall capability of the operator provide satisfactory maintenance the following shall be taken into account:

- (a) The assessment of incoming technical information from manufacturers, including Service Bulletins, relating to relevant aircraft types.
- (b) Initiating action as necessary on such information, particularly in relation to the Maintenance Schedule.
- (c) Responding to requests by the Manufacturer and the Authority, to have 'in-service' experience reports transmitted for their evaluation.

Note: The Authority may require access to an operator's assessments of manufacturer's service information to assist in evaluation of such information for the purpose of possible mandatory classification.

8.14.3 The operator shall obtain and assess airworthiness information from the manufacturer. When manufacturer's service information is received an immediate assessment must be made to establish priority of response. Matters of significant airworthiness importance, such as those having an impact on ETOPS flights, must be responded to promptly.

8.14.4 By means of Modification Records, Technical Records, Log Books or other means adopted by the operator it must be possible at any time to establish the record of compliance with Directives and Service Information for each of the operator's aircraft.

8.14.5 Operators shall ensure that the relevant aircraft manufacturer is aware that they are users of his aircraft so that all relevant service information, details of in-service experience of the aircraft and amendments to manuals, including the Flight Manual, are received and embodied in a timely manner. This is especially important where the operator is not the original owner of the aircraft, or it has been leased from the owner.

8.14.6 Where manuals, including the Flight Manual, have been prepared or amended by an agency other than the manufacturer, the operator must ensure that amendments are prepared as necessary, submitted to the Authority for approval and incorporated into manuals promptly.

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8.14.7 The technical library must hold and make available to personnel concerned the necessary technical data, e.g. DCA publications, the Civil Aviation Regulations, manufacturer's manuals, any relevant service information, any other related literature appropriate to the aircraft types covered by the AOC and copies of appropriate company manuals, procedures and Instructions. A person must be appointed to be responsible for the technical library.

8.14.8 Arrangements shall be made for:

- (a) The supply of amendments, so that all publications are kept up-to-date, and for departments concerned to be notified of such amendments, and of any additional technical information relevant to the work undertaken.
- (b) Maintenance manual information recorded on microfilm, microfiche or disk to be checked at specific intervals for amendment state and legibility, and any temporary amendments to be kept available adjacent to each reader.

8.14.9 Arrangements shall be made for all technical drawings to be suitably stored and a procedure operated to ensure that only drawings of the correct issue are released. A person should be made responsible for maintaining an up-to-date record of drawings available and also for notifying departments concerned when drawings have been superseded by a later issue.

8.14.10 The technical library shall make arrangements for manuals or sections of manuals, schedules, service information, etc., appropriate to the work undertaken, to be made available to line maintenance stations and a suitable procedure maintained to ensure that such information is kept up to date.

8.14.11 Microfilm, microfiche and compact disk viewing and printing equipment must be available, as appropriate, at each location where manuals in these formats are in use, and in the library. Adequate arrangements must be made for regular maintenance of the equipment and users should be made aware of contact points for servicing and repair.

8.15 Spares

8.15.1 Provision and Storage. The operator shall provide for sufficient spares to be available to ensure that aircraft, engine and equipment defects can be promptly rectified. Spares may be provided by either the Operator or the maintenance organisation, as contractually agreed, but must as far as possible be located where they will be required to be used.

8.15.2 Account must be taken of the operator's Minimum Equipment Lists (MEL) to ensure that essential spares to support the rectification of defects in systems required for operation are placed where they are most likely to be needed and in such numbers as to ensure that successive defects will be promptly addressed.

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- 8.15.3 The Authority may require to examine spares provisioning arrangements and any agreements entered into to ensure that adequate support for defect rectification is being made. Where necessary the Authority may require additional provisions to be made.
- 8.15.4 Spares provisions at each maintenance location should be determined when the particular base or station is commissioned and published in the company instructions/procedures defining the maintenance operations undertaken at the particular location.
- 8.15.5 Spares holdings should be reviewed at regular intervals at all locations to ensure that:
- (a) Redundant items are removed, e.g. for aircraft no longer operated.
 - (b) Superseded parts, or those with out of date modifications states, are removed for replacement or up-dating.
 - (c) Previously assessed numbers of spares remain adequate for support in relation to routes, frequency of flights and numbers of aircraft.
 - (d) Airworthiness Directives and other mandatory requirements published while parts are in storage are complied with before the part is released for service.
- 8.15.6 Storage Procedures. All spares must be stored, at all times and locations, in such a manner as to ensure that they remain airworthy and fit for use when required. Parts must be used in rotation so that they remain in stores for as short a time as possible, i.e. first in -first out. The following are required.
- (a) Procedures must be established to control the return to stores of items withdrawn for use but not needed, especially where the item has been installed in the aircraft and subsequently removed. The removal of components from completed assemblies must be rigidly controlled and any removal positively identified.
 - (b) Spares having a limited allowable shelf life, including materials and consumable products, must be identified and controlled.
 - (c) Stores references or batch numbers should be recorded on worksheets, cards or technical log pages so as to facilitate subsequent tracing of the associated part to source.
 - (d) Management procedures and conditions of storage must be reviewed regularly to ensure that satisfactory standards are being implemented.

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8.16 Instructions to Flight Crews

8.16.1 Operators shall include written instructions in the Operations Manual so that:

- (a) Aircraft commanders are advised of the action to be taken to obtain engineering assistance when aircraft are away from main base, of the procedures which are acceptable for any necessary certifications, and of the procedure to be adopted where any doubt exists over work being carried out by any other organisation, or which cannot be certified.
- (b) Where no arrangements have been made in respect of engineering support at route stations, aircraft commanders are advised of the procedures to be followed for reporting defects to main base.
- (c) Where it is desired to transmit advisory information of a temporary nature to flight crews, e.g. in respect of modifications to the aircraft, trial installations or other changes which the crew need to be aware of during their operation of the aircraft, or which impose operating restrictions, an information sheet should be included in the technical log containing the relevant data.

8.17 Aircraft Refueling -Quality Assurance

8.17.1 The operator must be satisfied with the quality of all fuel taken on board his aircraft, particularly in respect of freedom from water contamination.

8.17.2 The operator must comply with the provisions of the Civil Aviation Regulations on Aviation Fuel at Aerodromes if he has a facility or vehicle in which fuel is stored and/or delivered to aircraft, as the Civil Aviation Regulations provisions apply to all fuel suppliers in Mauritius to ensure that fuel dispensed is fit for use in aircraft.

8.17.3 The operator is required to:

- (a) Keep a record of the fuelling arrangements at each station where fuel is uplifted, indicating the company or person responsible for monitoring the fuel supplier. This may be a nominated airline at each location, or the operator may, himself, choose to monitor the supplier's quality performance.
- (b) Institute a fuel uplift sampling programme taking into account matters such as the following
 - (i) Known supplier quality performance, including any history of contamination.
 - (ii) Local environmental conditions, e.g. likely sources of contamination including microbiological contamination.
 - (iii) Supply facilities.
 - (iv) Frequency of use.

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- (c) Provide flight crew with guidance on the accomplishment of fuel uplift sample checks and clear instructions as to when these are to be carried out.
- (d) Provide maintenance personnel with guidance, in respect of fuel quality sampling, in relation to their station. Ensure that persons engaged in refueling activities are properly trained for their tasks.
- (e) Audit the arrangements as defined to ensure the continuing acceptability of fuel quality throughout the operation.

8.17.4 The minimum frequency of fuel contamination checking, at the point of uplift, must be declared in guidance to maintenance personnel and acceptable to the Authority.

8.17.5 The control of fuel storage and dispensing by suppliers should conform to an acceptable recommended standard.

8.18 Special Operations -Maintenance Requirements

8.18.1 All Weather Operations

8.18.1.1 The operator or his maintenance organisation must publish guidance to maintenance personnel and flight crews on the control of the validity of all weather categorisation. This guidance should take the form of:

- (a) A list of the systems required to be fully serviceable in order to qualify the aircraft for Category II or III operations.
- (b) A company procedure for the control of the modification status of the equipment fitted in the required systems which are deemed to be 'sensitive' in terms of all weather operations.
- (c) Placards applied to both equipment and installation to alert maintenance personnel to the need to fit only controlled equipment.
- (d) Procedures for downgrading all weather capability from Category III or II to Category I in the event that an uncontrolled item of equipment is fitted or after any defect in an affected system or any event which results in disturbance of the system.
- (e) Procedures for up-grading capability from Category I to Category II or III as appropriate when serviceability is proven, normally by performing a successful Category II approach or Category III landing in Category 1 weather conditions (sometimes referred to as a standard landing).

8.18.1.2 Provision shall be made to inform the crew of the Category II or III status of the aircraft before the flight is begun.

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8.18.1.3 When setting alert levels in system reliability monitoring, consideration must be given to the levels of reliability assumed in qualifying the aircraft for Category 2 or 3 operations. Significant trends must be responded to promptly or all weather classification must be suspended until remedial action has been taken.

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8.18.2 **Extended Range Twin-Engine Operations (ETOPS)**

8.18.2.1 Pursuant to Regulation 45 (5) of the Civil Aviation Regulations, the operator of a two-engine aeroplane exceeding 5,700 kg maximum total weight authorised on a route that contains a point further than 60 minutes flying time at the approved one-engine inoperative cruise speed from an adequate alternate aerodrome shall obtain an approval from the Authority for the conduct of such operations.

8.18.2.2 The operator shall prepare and implement a maintenance programme and procedures in accordance with the requirements in Section 4 of the Mauritius Civil Airworthiness Requirements.

8.18.3 **Reduced Vertical Separation Minima (RVSM)**

8.18.3.1 The operator requesting RVSM operational approval shall submit and implement a maintenance and inspection programme as part of a continuing airworthiness maintenance programme approval pertaining to altimeter system and altitude reporting equipment test and inspections. An effective maintenance and inspection programme shall incorporate these provisions as a requirement for maintenance programme approval.

8.18.3.2 The integrity of the design features necessary to ensure that altimetry systems continue to meet RVSM standards should be verified by scheduled tests and inspections in conjunction with an approved maintenance program. The operator should review its maintenance procedures and address all aspects of continuing airworthiness which are affected by RVSM requirements.

8.18.3.3 Each operator should demonstrate that adequate maintenance facilities are available to ensure continued compliance with the RVSM maintenance requirements.

8.18.3.4 Each operator requesting RVSM operational approval should submit a maintenance and inspection program which includes any maintenance requirements defined in the approved data package as part of a continuous maintenance program approval.

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8.18.3.5 The following maintenance documents should be reviewed as appropriate for RVSM maintenance approval:

- (a) Maintenance Manual
- (b) Structural Repair Manual
- (c) Standards Practices Manual
- (d) Illustrated Parts Catalogs
- (e) Maintenance Schedule
- (f) MMEL/MEL

8.18.3.6 If the operator is subject to an ongoing approved maintenance program, that program should contain the maintenance practices outlined in the applicable aircraft and component manufacturer's maintenance manuals for each aircraft type. The following items should be reviewed for compliance for RVSM approval and if the operator is not subject to an approved maintenance program the following items should be followed:

- (a) All RVSM equipment should be maintained in accordance with the component manufacturer's maintenance requirements outlined in the approved data package.
- (b) Any modification, repair, or design change which in any way alters the initial RVSM approval, should be subject to a design review by persons approved by the approving authority
- (c) Any maintenance practices which may affect the continuing RVSM approval integrity, eg, the alignment of pitot/static probes, dents, or the deformation around static plates, should be referred to the Authority.
- (d) Built-in Test Equipment (BITE) testing is not an acceptable basis for calibrations, (unless it is shown to be acceptable by the airframe manufacturer with the approval of the Authority) and should only be used for fault isolation and troubleshooting purposes.
- (e) Some aircraft manufacturers have determined that the removal and replacement of components utilizing quick disconnects and associated fittings, when properly connected, will not require a leak check. While this approach may allow the aircraft to meet static system certification standards when properly connected, it does not always ensure the integrity of the fittings and connectors, nor does it confirm system integrity during component replacement and reconnections. Therefore a system leak check or visual inspection should be accomplished any time a quick disconnect static line is broken.

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- 8.18.3.7 Airframe and static systems should be maintained in accordance with the airframe manufacturer's inspection standards and procedures.
- 8.18.4 **Minimum Navigation Performance Specifications (MNPS) and Required navigation Performance (RNP) Approval**
- 8.18.4.1 The operator requesting MNPS approval shall submit navigational equipment used, together with its installation and maintenance procedures.
- 8.18.4.2 Aircraft operating within MNPS Airspace are required to meet a Minimum Navigation Performance Specification (MNPS) in the horizontal plane through the mandatory carriage and use of a specified level of navigation equipment which has been approved by the Authority. Such approvals encompass all aspects affecting the expected navigation performance of the aircraft.
- 8.18.4.3 Approval for MNPS operations will require the checking by the Authority of various aspects affecting navigation performance. These aspects include the navigation equipment used, together with its installation and maintenance procedures, crew navigation procedures employed and training requirements.
- 8.18.4.4 Longitudinal separations between subsequent aircraft following the same track (in trail) and between aircraft on intersecting tracks in the NAT MNPS Airspace are assessed in terms of differences in ATAs/ETAs at common waypoints. The longitudinal separation minima currently used in the NAT MNPS Airspace are thus expressed in clock minutes. The maintenance of in-trail separations is aided by the application of the Mach Number Technique. However, aircraft clock errors resulting in waypoint ATA report errors can lead to an erosion of actual longitudinal separations between an aircraft. It is thus vitally important that the timekeeping device intended to be used to indicate waypoint passing times is accurate, and is synchronised to an acceptable UTC time signal before commencing flight in MNPS Airspace. Thus the pre-flight procedures for any NAT MNPS operation must include a UTC time check and resynchronisation of the aircraft Master Clock.
- 8.18.4.5 There are two navigational requirements for aircraft planning to operate in MNPS Airspace. One refers to the navigation performance which should be achieved, in terms of accuracy. The second refers to the need to carry standby equipment with comparable performance characteristics. Thus in order to justify consideration for approval of unrestricted operation in the MNPS Airspace an aircraft must be equipped with the following:
- (a) Two fully serviceable Long Range Navigation Systems (LRNSs). A LRNS may be one of the following:
 - (i) one Inertial Navigation System (INS);
 - (ii) one Global Navigation Satellite System (GNSS); or

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- (iii) one navigation system using the inputs from one or more Inertial Reference System (IRS) or any other sensor system complying with the MNPS requirement.
 - (b) each LRNS must be capable of providing to the flight crew a continuous indication of the aircraft position relative to desired track.
 - (c) it is highly desirable that the navigation system employed for the provision of steering guidance is capable of being coupled to the autopilot.
- 8.18.4.6 Operators requesting for RNP approval for flights in defined portions of airspace or on routes where an RNP type has been described must be equipped with navigation equipment which will enable it to operate in accordance with the prescribed RNP type(s).
- 8.18.4.7 The Authority will grant the applicable RNP type(s) approval when satisfied that the aircraft equipment together with the maintenance and operating procedures are sufficient to support the RNP type(s) operations.

8.19 Preparation of Aircraft for Flight

- 8.19.1 The operator must ensure that the Operations Manual and Maintenance Schedule contain a pre-flight inspection to be completed by the crew or by maintenance personnel where available, with which to verify that the aircraft continues to be serviceable. Details of this inspection should also be included in the Technical Log.
- 8.19.2 The operator must provide information, preferably, in the Technical Log, to advise the Commander when the next Scheduled Maintenance Inspection (SMI) is due, by flying hours and calendar time, any defects existing on the aircraft affecting its operational airworthiness and safety, and any maintenance actions falling due before the next SMI.
- 8.19.3 Where a procedure acceptable to the Authority exists for the control of maintenance actions necessary between Scheduled Maintenance Inspections it may not be practicable to include full details in the Technical log. In such cases, it should be possible for flight crew to verify, with the assistance of maintenance personnel if necessary that no maintenance task is due or will become due before the end of the intended flight.
- 8.19.4 The operator must provide any other information to the crew concerning the aircraft and its systems, including changes resulting from modifications, which may affect the operation of the aircraft.
- 8.19.5 The operator must have management and quality assurance procedures which will ensure that whether the aircraft is dispatched by the Operator or the task is wholly or partly sub-contracted:

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- (a) Fuel uplifted prior to flight is free from contamination.
- (b) Refueling of the aircraft is carried out in a controlled manner taking into account essential safety measures for fire prevention.
- (c) Baggage and cargo is loaded and restrained in accordance with Flight Manual limitations and that cargo doors are securely fastened.
- (d) Push-back and start-up are carried out to a standard procedure for the specific type of aircraft, under the control of a suitably trained person, that the area in which engines will be started is free from debris and contamination likely to damage the engines and that fire-fighting facilities are immediately available.
- (e) Control surface and landing gear locks, restraint devices and blanks are removed.
- (f) Proper attention is given to the rectification of recorded defects, compliance with the MEL and any limitations imposed in respect of the period of flights, flying hours or calendar time.
- (g) The aircraft is serviced and inspected as required by the approved maintenance schedule.

8.20 Cabin Reconfiguration -Approval and Control

- 8.20.1 Any change to the cabin configuration from that for which the aircraft was first certificated constitutes a modification which must be approved by the Authority.
- 8.20.2 Revised or alternative seating layouts, the fitting of stretchers or the conversion of the cabin to a cargo carrying role all constitute modifications which must conform to an approved design and be certified with the issue of a Certificate or Release to Service (CRS) each time they are installed or the original configuration is restored.
- 8.20.3 The Operations Manual and instructions to maintenance personnel must contain precise descriptions, preferably pictorial, of the approved configuration and any limitations to be observed. It is recommended that the various actions necessary are summarised in a checklist in each case, particularly in respect of the fitting or securing of emergency equipment and exits. Checklists should be readily available to personnel when carrying out configuration changes.
- 8.20.4 Where any possibility of error exists, such as in the position of seats and of fitting incorrect seats at and adjacent to emergency exits, the aircraft and the item to be fitted should be clearly marked and the pictorial diagram of the configuration should illustrate the arrangement.
- 8.20.5 Clear and easily interpreted guidance must be given to persons responsible for loading and securing the aircraft for flight so that the conditions of the approved modification are observed. In cases where the main cabin is used for the carriage of cargo it should be possible to readily install a configuration embodying methods of restraint which

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will ensure compliance with cabin design limitations without the need for extensive calculations at the point of dispatch.

- 8.20.6 It must be ensured that all cabin configurations are fully represented in aircraft prepared for service weights and indices used in the loading calculations made prior to flight dispatch.
- 8.20.7 Approved modifications for cargo configurations should contain the various restraint practices used by the operator to facilitate the satisfactory carriage of different types.
- 8.20.8 Operators must have a care and maintenance programme for cargo containers and pallets used either in cargo holds or the main cabin, particularly where the container itself is designed to provide necessary restraint and, in some cases, fire containment. Care and maintenance programmes must include details of permissible damage and any limitations, procedure for the assessment of containers and details of repair action to be taken.
- 8.20.9 Certificates of Release to Service (CRS) must be issued for each change of configuration. The CRS must refer to the modification being embodied or removed but may do so through reference to a company instruction or role diagram, etc which directly records compliance with the requirements of the modification.

8.21 Aircraft External Damage Marking

- 8.21.1 In the course of normal service aircraft may suffer external damage in the form of scratches and minor dents as a result of collision with cargo and baggage loading equipment, access steps and vehicles.
- 8.21.2 Operators shall have a system for identifying such damage after inspection and acceptance so that it is readily apparent when new damage occurs.
- 8.21.3 Damage should be entered in a record kept in the aircraft either directly on pictorial diagrams or by use of a grid referencing system: Such records may be included in the Technical Log or another readily available document.
- 8.21.4 When considered desirable as a means of prompt recognition of accepted damage it is acceptable for the actual damage to be marked using a suitable method of identification.
- 8.21.5 The damage record for each aircraft shall be reviewed by the operator from time to time to ensure that it has been kept up to date, that repaired damage is not removed from the aircraft record and that the cumulative effects of damage do not exceed manufacturers limitations.

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8.22 Aircraft Furnishings

- 8.22.1 The operator must have adequate control over the cleaning of aircraft furnishing materials. For this, they need to have knowledge of the material type, the recommended cleaning or proprietary finishing processing methods, the effects of time in service on the flame resistance properties, the flame retardant processes applied, if any, and the method of re-application of such a process, where this is necessary.
- 8.22.2 Where materials, e.g. seat covers, require the application of a proprietary flame retardant process in order to satisfy airworthiness requirements it is strongly recommended that each item is identified with the number and type of cleaning actions it receives until it is re-proofed.
- 8.22.3 It is not acceptable to place reliance on unsubstantiated claims concerning the continuance of flame resistant properties of a material after durability or additional flame retarded processes have been applied. Where such processes have been applied, there is need to prove the continued acceptability of a particular material or process in service, and, therefore, further flame resistance tests must be conducted in accordance with requirements identified in the Mauritius Airworthiness Requirements.

8.23 Maintenance of Cabin and Other Safety Provisions

- 8.23.1 Provisions made for the safety of passengers in flight and in the event of emergency alighting may be subject to abuse by passengers either deliberately or by virtue of frequent use. It is therefore essential that regular inspections take place to ensure that the means by which the particular provision is implemented remain valid and any defined or implied inspection requirements are accomplished.
- 8.23.2 In some cases re-configuration of the cabin can result in seat positions, placards and emergency equipment being moved or omitted. Subjects which require frequent monitoring include the following matters:
- (a) Stowage and accessibility of lifejackets.
 - (b) Continuing compliance, and test, of floor proximity escape path marking.
 - (c) Testing of cabin and toilet smoke detector systems.
 - (d) Access to and functioning of type III and IV exits.
 - (e) Integrity of cargo compartment fire containment capability, linings and seals.
 - (f) Inspection of catering carts and trolleys, brakes, restraints and placards.
 - (g) Functional test of inflatable escape chutes and flotation devices (aeroplanes and helicopters).

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- (h) Continuity integrity of toilet fire precautions.
- (i) Protection of life rafts and flotation bags from damage after deployment.
- (j) Compliance with approved cabin configuration for seat positions, access to exits and minimum space for seated passengers, particularly where seats are regularly removed and refitted.
- (k) Statutory provisions for the marking of exits and break-in areas.

8.24 Technical Logs

- 8.24.1 Upon rectification of any defect which has been entered in the technical log there shall be Certificate of Release to Service issued readily identifiable with the defect entry to which it relates.
- 8.24.2 Copies of all technical log page format must be submitted to the Authority for acceptance/approval.

9 MAINTENANCE FACILITIES

9.1 General

- 9.1.1 When the operator performs maintenance of his own aircraft, engines, propellers, appliances, emergency equipment items, and parts, he shall comply with the requirements of MCAR-145.
- 9.1.2 The operator may contract engineering and maintenance functions to a separate organisation approved in accordance with the MCAR-145. However, responsibility for the airworthiness of the operator's aircraft remains with the operator.

9.2 Line Maintenance Facilities (Line Station Approvals)

- 9.2.1 The numbers and qualifications of staff at line stations must be sufficient to perform the tasks allocated to the station. Shift arrangements must ensure that persons are available when needed and to ensure continuity of control over servicing and dispatch activities. Arrangements must be made to ensure that on-coming shifts are made fully aware of any outstanding or incomplete task.
- 9.2.2 Scheduled or pre-planned tasks must only be allocated to line stations where sufficient staff and down-time are available to perform the task, in a manner commensurate with its airworthiness significance, the working conditions are appropriate to the nature of the task and the necessary tools, equipment, test apparatus and technical instructions are available.

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9.2.3 Each line station must be provided with:

- (a) A summary of the technical literature provided for the station. The list should be kept up to date and made available to the technical library so that amendments and periodic checks of currency can be made.
- (b) A summary of the station spares holding with an indication of which items are held for priority purposes, e.g. to meet possible MEL compliance requirements or ETOPS dispatches etc.
- (c) Company procedures and technical instructions appropriate to the aircraft types supported.
- (d) Such extracts from the maintenance schedule, in the form of worksheets or cards etc, as are necessary to perform the tasks allocated to the station.
- (e) Access to deferred and repetitive defect information to assist in the diagnosis of reported defects.
- (f) Details of any subcontracts for line support, fuel supply, loading and ground handling entered into by the Operator to enable the person responsible for dispatch to ensure that all significant airworthiness tasks are satisfactorily accomplished.
- (g) Maintenance facilities and working accommodation appropriate to the scale of work and undertakings of the station.
- (h) Ground support equipment as appropriate including equipment or access to equipment for the ground de-icing, anti-icing of aircraft as necessary.

9.3 Ground De-icing and Anti-icing

9.3.1 It must be ensured that de-icing equipment is checked immediately before the commencement of winter operations and at intervals throughout the winter season to verify that the equipment is fully serviceable at each location where aircraft are likely to require de-icing.

9.3.2 Items such as mixer nozzles must be correctly calibrated and it must be ensured that they are not replaced with incorrectly calibrated nozzles during the winter season.

9.3.3 Satisfactory procedures for testing mixtures of de-icing fluids must be established together with suitable conditions for the storage and identification of de-icing fluid.

9.3.4 Where facilities for common use are provided at airports or this task is contracted out to a specialist organisation such audit checks must be carried out by the operator as are necessary to ensure that de-icing/anti-icing of his type of aircraft will be carried out effectively and in a manner to ensure subsequent safe operation.

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10 QUALITY CONTROL AND ASSURANCE

10.1 General

10.1.1 The operator's systems for quality assurance must take into account all of the facilities and procedures utilised to ensure continuing airworthiness, at each of the operator's locations where activities take place affecting the airworthiness of the aircraft.

10.1.2 Quality assurance must therefore be effective throughout the operation and maintenance of aircraft and quality auditing must ensure that control is being properly applied and achieving satisfactory results.

10.1.3 The operator's quality assurance policies and systems must be described in the Engineering Exposition Document together with the Quality Assurance audit programme.

10.1.4 The operator shall ensure that the quality department is adequately staffed by appropriately trained personnel (including recurrent training) to discharge his responsibilities.

10.2 Procedures

10.2.1 Staff assigned to quality assurance duties must be:

- (a) sufficiently experienced in the company systems and procedures and technically knowledgeable of the aircraft being maintained so as to enable them to perform their duties satisfactorily;
- (b) experienced in the techniques of quality control and assurance or receive suitable training before taking up their duties;
- (c) given clearly defined terms of reference and responsibility within the organisation.

10.2.2 The department responsible for Quality Assurance must arrange for independent quality audit checks to be carried out on a planned basis. Emphasis should be placed on the company systems employed to achieve and ensure airworthiness, their suitability and effectiveness. The scope of quality checks should follow the guidelines given at Appendix H.

10.2.3 All quality checks must be recorded and assessed and any criticisms forwarded to the person responsible for the particular facility or procedure for corrective action to be taken. There must be a feed-back system for confirming to the quality assurance staff that corrective action has been taken and to ensure that persons concerned with any audit deficiency are kept aware of both the adverse report and the outcome.

10.2.4 The operator shall submit to the Authority regular reports on quality assurance overview including quality indicators.

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11 REQUIREMENTS FOR THE MAINTENANCE OF APPROVAL

- 11.1 The operator shall continue to meet the standard necessary to undertake the work for which it is approved and all activities carried out under the approval granted shall be conducted to the satisfaction of the Authority.
- 11.2 The operator shall be responsible for compliance with the Civil Aviation Regulations, the Air Operator Certificate Requirements, the Mauritius Civil Airworthiness Requirements, associated procedures, and other requirements as may be prescribed by the Authority from time to time.
- 11.3 The operator shall consult the Authority if any difficulty arises in the interpretation of the Civil Aviation Regulations, the Air Operator Certificate Requirements, the Mauritius Civil Airworthiness Requirements, associated procedures, or on any airworthiness matter which involves new problems or techniques.
- 11.4 The Engineering Exposition Document required by paragraph 2 shall be reviewed periodically by the operator and any necessary amendments submitted in duplicate to the Authority for acceptance.
- 11.5 The operator shall report to the Authority in writing as soon as possible of any accident or incident occurring in the approved facility.
- 11.6 The operator shall permit access by authorised officers of the Authority to any of its facilities and shall arrange similar access to foreign organisations undertaking work on its behalf for the purpose of:
- (a) Assessing whether the operator and his maintenance contractors continue to comply with the conditions of its approval and whether the activities to which the approval relates are carried out to a satisfactory standard.
 - (b) Assessing whether a foreign organisation has adequate facilities, staff premises and equipment, the quality of work is satisfactory and coordination, planning and control of all work complies with these requirements.
 - (c) Assessing whether the policies and procedures stated in the Engineering Exposition Document are being observed.
 - (d) Inspection of aircraft, components, equipment or any work in progress to assess the competence or diligence of engineering staff.
 - (e) Witnessing tests or inspections in any way associated with establishing the airworthiness of an aircraft, engine or any part thereof.
 - (f) Investigation of components, equipment or materials which due to unserviceability, manufacturing discrepancies, inadequate control during manufacture, overhaul or processing, inadequate storage, deterioration or contamination have been found to be unsuitable for aircraft use.

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- (g) Investigation of defects in aircraft, components or equipment and accidents/incidents.
- 11.7 Where deficiencies or discrepancies have been disclosed to the operator or his maintenance contractor subject to a surveillance inspection, the operator shall ensure that corrective action is taken and advise the Authority of the action taken.

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APPENDIX A
SPECIMEN AIR OPERATOR CERTIFICATE

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DEPARTMENT OF CIVIL AVIATION
AIR OPERATOR CERTIFICATION REQUIREMENTS

REPUBLIC OF MAURITIUS



AIR OPERATOR'S CERTIFICATE

The Director of Civil Aviation,

hereby certifies that

XYZ
of
XXXXX
PORT LOUIS

trading as

YYYYYYY

having satisfied the operator certification requirements prescribed in the Civil Aviation Regulations 2007, has been found competent to conduct commercial operations, and is competent to secure the safe operation of aircraft of the types specified in the Operations Specification hereto on flights within the areas of operation specified in the Operations Specification for the purpose of public transport, subject to the conditions specified below and contained in that Operations Specification.

This certificate shall not be valid during the continuance of the breach of any condition thereof; provided that, a breach of a condition, which relates to a particular type of aircraft only, shall not render this certificate invalid in respect of any other type of aircraft.

This certificate is not transferable and is effective from the date of signature and shall remain in force unless varied, suspended or revoked up to 13 August 2008.

Issued at: **MAURITIUS**

Signature:

Date: **21 March 2007**

Name:

Title: **DIRECTOR OF CIVIL AVIATION**

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AIR OPERATOR CERTIFICATION REQUIREMENTS

AOC No **xx**
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REPUBLIC OF MAURITIUS



AIR OPERATOR'S CERTIFICATE

XYZ
Of

XXXXXXXX
PORT LOUIS

Trading as

XXXXXXXX

GENERAL CONDITIONS APPLYING TO THE OPERATION OF ANY AIRCRAFT.

This certificate is granted subject to the following conditions:

- A1 Subject to A2, the holder of this certificate shall comply with those provisions contained in the Civil Aviation Regulations of Mauritius, except for any such provisions as specified in the column headed Civil Aviation Regulations Non-compliance in subsection E of the Operations Specification and subject to any Special Authorisations/Approvals and Limitations set out in the Operations Specification.
- A2 The holder of this certificate shall comply with any of the said provisions contained in the Civil Aviation Regulations that refer to “an operator”, so far they apply to that operator, and shall take all reasonable measures to ensure compliance with those that refer to “the commander”, “passenger” or other persons.
- A3 The holder of this certificate shall, within a reasonable time after being requested to do so by a person who is authorised by the Director of Civil Aviation, cause to be produced to that person any document required to be stored in accordance with Civil Aviation Regulations and shall permit an authorised person to inspect and copy any such document.
- A4 Every flight under this certificate shall be conducted in accordance with the provisions of the Company Operations Manual.

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AIR OPERATOR CERTIFICATION REQUIREMENTS

AOC No xx
AOC Issue No xx
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REPUBLIC OF MAURITIUS



AIR OPERATOR'S CERTIFICATE

XYZ
Of

XXXXX
PORT LOUIS

Trading as

XXXXXXXXXX

SPECIAL CONDITIONS

This certificate is granted subject to the following special conditions:

- B1 The holder of this certificate shall give to the Director of Civil Aviation not less than 10 days' notice in writing of any intended change in the nominated post holders or their duties.
- B2 The holder of this certificate shall give to the Director of Civil Aviation not less than 28 days' notice in writing of any change in the employment or cessation of the employment of a Contractor to maintain any of the aircraft or any part of its equipment, including the radio station, or any intended change in the duties of the Contractor in that regard.
- B3 The holder of this certificate shall give to the Director of Civil Aviation immediate notice, in writing, if the Company goes into liquidation, or is placed into receivership or administration, and the name of the liquidator, receiver or administrator as the case may be.

DEPARTMENT OF CIVIL AVIATION
AIR OPERATOR CERTIFICATION REQUIREMENTS

AOC No xx
Ops Spec Issue No xx
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REPUBLIC OF MAURITIUS



AIR OPERATOR'S CERTIFICATE

XYZ
of
XXXXX
PORT LOUIS

Trading as

XXXXXXXXXX

THE OPERATIONS SPECIFICATIONS

- | | | |
|-----------|------------------------------------|---|
| A) | Type(s) of Operations | A1 – Passengers <ul style="list-style-type: none">• Schedule• Non-Schedule• Charter A2 – Cargo
A3 – Emergency medical service |
| B) | Type(s) of Aircraft | XXXXX |
| C) | Areas(s) of Operation | XXXXXXXX |
| D) | Special Limitations | XXXXXXXX |
| E) | RNP | XXXXX |
| F) | Aircraft Registration Marks | 3B-XXX |

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AIR OPERATOR CERTIFICATION REQUIREMENTS

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REPUBLIC OF MAURITIUS



AIR OPERATOR'S CERTIFICATE

XYZ

of

XXXXXX
PORT LOUIS

Trading as

XXXXXXXXXX

THE OPERATIONS SPECIFICATIONS continued

G) Nominated Posts

Accountable Manager

Director of Flight Operations

Director of Maintenance

Chief Pilot

Chief Training Captain

Quality Assurance Manager

Signature

Title: **Director of Civil Aviation**

Name:

Date: 31 March 2007

DEPARTMENT OF CIVIL AVIATION

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APPENDIX B

AERODROME OPERATING MINIMA

AERODROME OPERATING MINIMA

- 1 When specifying Aerodrome Operating Minima as required by the Civil Aviation Regulations Fourteenth Schedule, operators should not specify values of runway visual range for Category I operations lower than the appropriate values.

- 2 Operators may use either the Jeppesen, Aerad or any charts that are approved by the Authority. The minimums specified in these charts should not be lower than that specified by the respective states that they operate into.

DH (feet)	High intensity approach lighting Length available (meters) Day/Night 749 – 650 649 – 550 549 – 450 449 – 350 349 – 250									Low intensity approach lighting available (meters)			
	Over 800	850 – 750						249 – 150	149 – 0	Day All lengths	Over 600 Night 599 - 300 299 - 0		
200 - 212	600	600	700	700	800	800	900	1000	1100	1100	900	1000	1100
213 - 237	600	700	700	800	800	900	1000	1100	1200	1200	900	1100	1200
238 - 262	700	700	800	900	900	1000	1100	1200	1300	1300	1000	1200	1300
263 - 287	700	800	900	1000	1000	1100	1200	1300	1400	1400	1100	1300	1400
288 - 325	800	900	1000	1100	1100	1200	1300	1400	1500	1500	1200	1400	1500
326 - 375	900	1000	1100	1200	1200	1300	1400	1400	1500	1500	1200	1400	1500
376 - 425	1000	1100	1200	1300	1300	1400	1500	1500	1500	1500	1300	1500	1500
426 - 475	1100	1200	1300	1400	1400	1500	1500	1500	1500	1500	1400	1500	1500
476 - 525	1200	1300	1400	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
526 - 575	1300	1400	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
576 - 625	1400	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
626 or higher	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500

- 3 The following is an example of the RVR related to decision height and approach lighting available for aeroplanes exceeding 5 700 kg MTWA.

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APPENDIX C 1

THE AVOIDANCE OF EXCESSIVE FATIGUE FLIGHT CREW

DEFINITIONS

In this document various terms have the meanings defined below ascribed to them:

(a) **Duty Period**

Any continuous period throughout which either a crew member flies in any aircraft, whether as a crew member or as a passenger, at the behest of his employer, or otherwise carries out a required duty in the course of his employment. It includes any flying duty period, positioning at the behest of the operator, ground training, ground duties and standby at an airport.

(Note: Standby at home or in hotel accommodation does not form part of a duty period, but the time spent on standby at home or in hotel accommodation may be factorised for the purposes of cumulative duty limits.)

(b) **Flying Duty Period (FDP)**

Any duty period during which a crew member flies in an aircraft as a member of its operating crew. It starts at the time the crew member is required by the operator to report for duty and includes such preflight and immediate post flight duties as are required by the operator.

(c) **Standby**

A period of time when an operator places restraints on a crew member who would otherwise be off duty.

(d) **Rest Period**

A period before starting a flying duty period which is intended to ensure that a crew member is adequately rested before flight. A crew member who completes a period of standby at home or in hotel accommodation need not be given a rest period before his next flying duty.

(e) **Positioning**

The practice of transferring crews from place to place as passengers on surface or air transport at the behest of the operator. Travelling between place of rest and place of duty is not classified as positioning.

(f) **Local Night**

A period of 8 hours falling between 2200 hours and 0800 hours local time.

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(g) **Normal Operating Crew**

The minimum flight deck crew required for public transport operation in compliance with the Civil aviation Regulations and the Certificate of Airworthiness.

(h) **Augmented Crew**

A normal operating crew augmented by one or more pilots and, where the crew includes a flight engineer, one flight engineer.

(i) **Days Off**

A single day off shall be a period of 30 hours free of all duty starting either at 1800 hours or at midnight local time. Consecutive days off shall be consecutive 24 hour periods immediately following a single day off. A rest period may be included as part of a day off.

1 **INTRODUCTION – REQUIREMENTS OF THE CIVIL AVIATION REGULATIONS**

1.1 The relevant paragraphs of the Civil Aviation Regulations require, broadly, that an operator of an aircraft to which the paragraphs apply shall have a scheme for the regulation of flight times of his crews. This scheme must be included in the Company Operations Manual, or incorporated in a document, a copy of which has been made available to all crew members.

1.2 These requirements of the Civil Aviation Regulations apply in relation to an aircraft registered in Mauritius which is either:

(a) engaged on a flight for the purpose of public transport; or

(b) operated by an air transport undertaking;

provided that the requirements shall not apply in relation to a flight made for the purpose of instruction in flying, given by or on behalf of a flying club or a flying school, or an organisation which is not an air transport undertaking.

2 **GENERAL PRINCIPLES OF CONTROL OF FLIGHT, DUTY AND REST TIME**

2.1 The prime objective of any scheme of flight time limitations is to ensure that crew members are adequately rested at the beginning of each flying duty period. Aircraft operators will therefore need to take account of inter-related planning constraints on individual duty and rest periods, on the length of cycles of duty and the associated periods of time off and on cumulative duty hours within specific periods.

2.2 Duties must be scheduled within the limits of the operator's scheme. To allow for unforeseeable delays the aircraft commander may within prescribed conditions, use

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his discretion to exceed the limits on the day. Nevertheless, flight schedules must be realistic, and the planning of duties must be designed to avoid, as far as possible, overruns of flying duty limits.

2.3 The Authority will conduct periodic and spot checks of operators' records and aircraft commanders' reports to assess whether the operator's planning of flight schedules and duty in general is producing results in practice which are compatible with the limitations provided for in the operator's scheme.

2.4 Other general considerations in the sensible planning of duties are:

(a) the need to construct consecutive work patterns which will avoid as far as possible such undesirable rostering practices as alternating day/night duties and the positioning of crews in a manner likely to result in a serious disruption of established sleep/work patterns;

(b) the need, particularly where flights are carried out on a programmed basis, to allow a reasonable period for the pre-flight notification of duty to crews, other than those on standby; and

(c) the need to plan time off and also to ensure that crews are notified of their allocation well in advance.

3 RESPONSIBILITIES OF CREW MEMBERS

3.1 Responsibility for the proper control of flight and duty time cannot rest on the operator alone. It is the responsibility of all crew members to make optimum use of the opportunities and facilities for rest provided by the operator, and to plan and use their rest periods properly so as to minimise the risk of fatigue.

4 STANDARD PROVISIONS REQUIRED FOR AN OPERATOR'S SCHEME OF LIMITATIONS

4.1 The standard provisions which the Authority regards as the basis for an acceptable scheme of flight and duty limitations are contained in paragraphs 5 to 10 of this Appendix.

5 LIMITATIONS ON SINGLE FLYING DUTY PERIODS - FLIGHT CREW

5.1 The maximum rostered FDP (in hours) shall be in accordance with Table A or B (multi-crew aeroplanes), Table C (single pilot aeroplanes) or Table D (helicopters) modified as appropriate by paragraphs 5.2, 5.3 and 5.4 of this Appendix.

5.1.1 Maximum Rostered FDP - Aeroplanes in which the normal crew consists of two or more flight deck crew members

Table A shall apply when the FDP starts at a place where the crew member is acclimatised to local time, and Table B shall apply at other times. To be considered

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acclimatised for the purposes of this document, a crew member must be allowed 3 consecutive local nights free of duty within a local time zone band which is two hours wide. He/she will thereafter be considered to remain acclimatised to that same time zone band until he/she ends a duty period at a place where local time is outside it.

Table A Acclimatised to local time

Local Time of Start	Sectors							
	1	2	3	4	5	6	7	8 or more
0600 – 0759	13	12¼	11½	10¾	10	9¼	9	9
0800 – 1259	14	13¼	12½	11¾	11	10 ½	10	9 ½
1300 – 1759	13	12¼	11½	10¾	10	9¼	9	9
1800 – 2159	12	11 ¼	10 ½	9 ¾	9	9 ½	9	9
2200 – 0559	11	10¼	9½	9	9	9	9	9

Table B Not acclimatised to local time

Length of preceding rest (hours)	Sectors						
	1	2	3	4	5	6	7 or more
Up to 18 or over 30	13	12¼	11½	10¾	10	9¼	9
Between 18 and 30	11 ½	11	10½	9¾	9	9	9

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5.1.2 **Table C** **Maximum Rostered FDP – Single pilot aeroplanes**

Local Time to Start	Sectors				
	Up to 4	5	6	7	8 or more
0600 – 0659	10	9¼	8½	8	8
0700 – 1259	11	10¼	9½	8¾	8
1300 – 1759	10	9¼	8½	8	8
1800 – 2159	9	8¼	8	8	8
2200 – 0559	8	8	8	8	8

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5.1.3 Table D Maximum Rostered FDP – helicopters

Local Time of Start	Single Pilot		Two Pilots	
	Maximum Length of Flying Duty Period (hours)	Maximum Flying	Maximum Length of Flying Duty Period (hours)	Maximum Flying Time (hours)
0600 – 0659	9	6	11	8
0700 – 0759	10	7	11	8
0800 – 1359	10	7	12	8
1400 – 2159	9	6	10	7
2200 – 0559	8	5	9	6

5.1.4 Additional Limits on Two-Crew Long Sectors

When an aeroplane flight crew consists only of two pilots, the FDP calculated from Table A or B will be adjusted by counting long sectors as more than one sector in the following manner:

Single sector length (Block Time) as

	Count as (Sector)	
	Table A	Table B
Over 7 but not over 9 hours	2	4
Over 9 but not over 11 hours	3	4
Over 11 hours	4	N/A

5.2 Extension of Maximum Rostered FDP by Augmented Crew

5.2.1 When an augmented crew is used to extend the maximum rostered FDP the additional crew member or members shall hold qualifications which meet the requirements of the operational duty he/she will perform. The qualifications must be specified by the operator and mutually agreed with the Authority.

5.2.2 Aeroplanes with a normal flight deck crew of 2 crew members

The maximum rostered FDP as determined from Table A or B and paragraph 5.1.4 may be extended:

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- (a) by up to 4 hours if the crew is augmented by one pilot and there is suitable rest facilities available for one pilot.
- (b) by up to 7 hours if the crew is augmented by two pilots and there are suitable rest facilities available for two pilots.
- (c) up to the normal limits of Table A or B without applying paragraph 5.1.4 if the crew is augmented by one pilot and no suitable rest facilities is available.

5.2.3 Aeroplanes with a normal flight deck crew of more than two persons
If the crew is augmented by one pilot and one flight engineer with suitable rest facilities being available for the pilot and flight engineer, the maximum rostered FDP as determined from Table A or B may be extended to 16 hours.

5.3 Split Duty

5.3.1 When a rostered FDP consists of two or more sectors separated by an off-duty period of less than the minimum rest period, the limits in Table A, B, C and D may be increased according to the time between scheduled arrival and scheduled departure, known as the transit period, as follows:

Consecutive hours rest	Increase in FDP limit
Less than 3	Nil
3-10	A period equal to half the consecutive hours rest taken

5.3.2 When the transit period is not more than 6 hours it will be sufficient if a quiet and comfortable place is available, not open to the public, but if the transit period is more than 6 hours a bed must be provided.

5.4 Combinations of flying and other duty

All time spent on positioning as required by the operator shall be classed as duty, but positioning shall not count as a sector when assessing the maximum permissible FDP. Positioning, any form of ground duty and standby at an airport which immediately precedes a flying duty shall be included in the FDP and subject to the limits in paragraphs 5.1 to 5.3. Positioning and ground duties immediately following a flying duty shall not be part of the FDP, but shall be duty; the ensuing rest period shall not start until all duty is finished, and its length shall be based on the total length of FDP plus duty. Positioning which neither immediately precedes nor follows a FDP shall

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5.5 Delayed Reporting Time

When crew members are informed of a delay before leaving their place of rest the FDP shall start at the new reporting time, or 4 hours after the original reporting time, whichever is the earlier. The maximum FDP shall be based on the original reporting time. This paragraph shall not apply if crew members are given 10 hours or more notice of a new reporting time.

6 DISCRETION TO EXTEND A FDP

6.1 An aircraft commander after taking note of the circumstances of other members of the crew may at his discretion extend an FDP beyond the limits permitted by paragraph 5 provided that:-

- (a) the safety of the flight will not be prejudiced; and
- (b) the extended FDP shall not exceed by more than three hours the maximum FDP permitted by paragraph 5, except in an emergency.

Note: An emergency in respect of an extension of a flying duty is a situation which in the judgement of the commander presents a serious risk to health or safety.

7 REST PERIODS

7.1 The minimum rest period which must be scheduled prior to a flying duty period shall be:

- (a) not less than 10 hours if it includes a local night and not less than 11 hours if it does not include a local night; and
- (b) as least as long as the preceding duty rounded up to the next whole hour; and
- (c) if the preceding duty exceeded 16 hours, not less than 16 hours plus two hours for every hour or part of an hour that the previous duty exceeded 16 hours.

7.2 The rest periods required by paragraph 7.1 shall be subject to the following provisos;

- (a) if the preceding duty period exceeded 18 hours, the rest period must include a local night.
- (b) if the rest is taken in accommodation provided by the operator the minima in Para 7.1(a) are to be increased by the amount, if any, by which the return travelling time to and from the rest accommodation exceeds one hour.

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7.3 Discretion to reduce a Rest Period

A commander on behalf of the crew or an individual on his own behalf may at his discretion reduce a rest period below the minima in Para 7.1 (b) or (c) provided:-

- (a) the safety of the flight or flights will not be prejudiced, and
- (b) the rest actually taken allows a minimum of 10 hours at the accommodation where rest is taken

8 CUMULATIVE LIMITS

8.1 The maximum number of flying hours a crew member may be permitted to undertake are:

100 hours in any consecutive 28 days

900 hours in any consecutive 12 complete calendar months

8.2 Duty hours

Crews on extended periods away from base on flying duties shall be scheduled within the following limits on cumulative duty counting from the day the crew member reports for duty at base up to and including the day he/she next goes off duty at base:

3 consecutive days	32 hours
7 consecutive days	56 hours
8 consecutive days	60 hours
9 consecutive days	64 hours
10 consecutive days	68 hours
11 consecutive days	72 hours
12 consecutive days	75 hours
13 consecutive days	78 hours
14 consecutive days	81 hours
15 consecutive days	84 hours

and for any further days at the rate of 3 hours per day.

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In the event of disruption to a schedule after it has commenced the commander on behalf of the crew or an individual on his own behalf may at his discretion exceed these limits.

9 DAYS OFF

9.1 Crew members shall be granted an average of two days off per week, not counting periods of leave. A minimum of 6 days off in any consecutive 4 weeks is permissible, provided the shortfall is made good in the preceding or following 4 weeks. The detailed pattern of these days off shall, depending on the nature of the operation, meet the conditions of EITHER paragraph 9.2 OR paragraph 9.3.

9.2 Crew members shall normally:

- (a) be rostered to have two consecutive days off every two weeks; and
- (b) not work more than seven consecutive days between days off.

9.3 On a period of flying duties away from base:

- (a) crews shall not work more than seven consecutive days without a short break of 30 consecutive hours; and
- (b) on return to base crews shall be given days off at base according to the following table before being rostered for further flying duties.

5 to 7 days away	2 days off
8 to 10 days away	3 days off
11 to 13 days away	4 days off
14 or more days away	5 days off

Note 1: For the purposes of this paragraph the operator may define the "week" as seven days commencing on any day, as long as it is applied consistently.

Note 2: A day off may include a rest period required by paragraph 7.

10 RECORDS AND REPORTING

10.1 To assist in meeting the above requirements, an operator shall keep records for all his flight deck crews of their duty, flying and rest periods achieved. Records shall be preserved for 12 months from the date of the last relevant entry.

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- 10.2 Any commander or crew member who exercises his discretion under paragraph 6 or 7.3 shall make a report of the circumstances to the operator; and the operator shall retain such reports for 6 months. If the extension of duty or reduction of rest exceeded 2 hours, the operator shall report it to the authority within 30 days. The report should include date, time, aircraft, crew, details of planned and achieved schedules and the report of the circumstances.
- 10.3 A flight crew member is required to inform anyone who employs his services as a flight crew member of all flying he/she undertakes, whether professionally or privately.

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APPENDIX C 2

**CABIN CREW
FLIGHT DUTY AND REST PERIODS**

OPERATION OF ALL FLIGHTS

FLIGHT DUTY PERIODS AND REST PERIODS FOR CABIN CREW

1 GENERAL

- 1.1 The standard provisions on cabin crew flight duty and rest periods set up in this section apply to all cabin crew operating a flight and not only to the minimum cabin crew complement carried on board the aircraft to meet the provisions of the Civil Aviation Regulations.
- 1.2 The provisions of an operator's scheme for the regulation of flight times applicable to cabin crew shall comply with the requirements set out below.

2 FLIGHT DUTY PERIOD (FDP)

- 2.1 An operator may assign a duty period to a cabin crew only when the applicable flight duty period (FDP) limitations of this paragraph are met.
- 2.2 Except as provided in sub paragraph 2.3, an operator may not assign a cabin crew a FDP of more than 14 hours without rest facilities being provided.
- 2.3 An operator may assign a cabin crew for a FDP up to 19 hours provided the following conditions are met:
- (a) Horizontal rest facilities are provided.
 - (b) The divisions of duty and rest is fairly distributed among all cabin crew members on a flight.
 - (c) A minimum in-flight rest period of:
 - 3 hours must be provided for a FDP up to 17 hours
 - 4 hours must be provided for a FDP up to 19 hours

Note: (i) In the event when rest cannot be taken in-flight due to unforeseen circumstances, rest may be taken on the ground. However such ground rest facilities must be located in a quiet place conducive to rest.

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- (ii) If horizontal rest facilities are not available due to unforeseen circumstances, the minimum in-flight rest period specified in paragraph 2.3 (c) shall be increased by 1 hour.

2.4 In the event of a flight disruption or delay, the FDP limits may be extended as follows:

- (a) Paragraph 2.2 may be extended up to 16 1/2 hours or up to one hour beyond the maximum extended FDP of the applicable flight crew complement operating on the same flight sectors;
- (b) Paragraph 2.3 may be extended up to one hour beyond the maximum extended FDP of the applicable flight crew complement operating on the same flight sector(s). (This would be applicable only when the maximum extended FDP of the flight crew is more than 19 hours.)

Note: The above limits shall not be exceeded except unless in an emergency situation where, in the judgement of the commander, there is a need to extend the FDP because of a serious risk to health or safety to persons on board the aircraft.

3 REST PERIOD AFTER A FDP

3.1 The minimum rest period for cabin crew immediately after a FDP shall be:

- (a) as long as the preceding FDP less an hour; or
- (b) 10 hours whichever is greater.

3.2 In the event of a flight disruption or delay, the minimum rest periods spelt out in paragraphs 3.1 (a) may be reduced to 9 hours. This limit shall not be exceeded except unless in an emergency situation where, in the judgement of the commander, there is a need to reduce the rest periods because of a serious risk to health or safety to persons on board the aircraft.

4 DAYS OFF

4.1 Cabin Crew shall:

- (a) not be on duty more than 7 consecutive days between days off; and
- (b) have a minimum of 2 days off in any consecutive 12 days; and
- (c) have a minimum of 7 days off in any consecutive 4 weeks; and
- (d) have an average of at least 8 days off in each consecutive 4 week period, averaged over three such periods.

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Note: A day off is a 24 hour period starting from mid-night local time.

5 DUTY HOUR LIMITATION

5.1 Cabin crew duty hours shall not exceed:

- (a) 60 hours in any 7 consecutive days. (However, in the event of unforeseen delays after the commencement of a rostered duty period covering a serious of duty periods, this limit may be increased to 65 hours);
- (b) 105 hours in any 14 consecutive days;
- (c) 210 hours in any 28 consecutive days;

Note: Duty will include flying duties, positioning at the behest of the operator, ground duties and standby duties at the airport.

6 RECORDS TO BE KEPT

6.1 All duty hours records must be kept for at least a period of one year.

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APPENDIX D

ALTIMETER PROCEDURES

- 1 This Appendix is intended to assist operators in preparing instructions relating to the proper use of all altimeters on the aircraft flight deck. It applies mainly to multi-crew operations, but can, with few exceptions, be applied to single-pilot operations. It is for operators to determine their own policy in using AFE or QFE for landing; this policy should be reflected in the instructions and procedures which should be clear, positive and consistent.
- 2 Instructions should cover all stages of the operation of the aircraft, both before and during flight. A company's basic policy should be accurately reflected in its check lists, and take account of the following:
 - 2.1 **Pre-flight serviceability tests:**
 - 2.2 The settings to be made on each altimeter on the flight deck prior to take-off and at each stage of the flight:
 - 2.3 During the approach phase a check of airfield height is required; a cross check of airfield height against the difference between the QFE and QNH settings should also be made when QFE is used for landing.
- 3 **Additional instructions should be included on the following (where appropriate to the basic policy):**
 - 3.1 The procedure for indicating decision heights for landing; this might range from a figure in the navigation log to altimeter bugs and/or separate "landing data cards".
 - 3.2 The settings and procedures to be adopted when QFE is not available or cannot for some reason be used by an aircraft when a company's normal policy is to use QFE.
 - 3.3 The manner of checking and of the use of any non-pressure altimeter(s).
 - 3.4 The provision of appropriate procedures if an altimeter becomes unserviceable in flight, and also the conditions to be met if this is a pre-flight allowable deficiency.
 - 3.5 The manner of setting the altimeters, when the take-off or landing is carried out from the co-pilot's seat. Unless there are good reasons for doing otherwise, operators should not vary their normal policy.

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Note: Neither in the policy statement nor in the check lists is it sufficient for the word “set” to be used. The setting required by the operator should be clearly stated in respect of each altimeter concerned, including any “standby” altimeter.

- 4 **The following matters should also be covered in the operations manual:**
- 4.1 The calls to be made by the monitoring pilots during instrument approaches, e.g. at the outer marker and at 100 ft above decision height or thereabouts. In the case of Category II and III weather minima approaches, the appropriate calls and responses will need to be stated in some detail.
 - 4.2 Correct reporting of height changes to ATC: it should be particularly noted that the report should not be made before arriving at or before leaving the particular altitude/level.
 - 4.3 Provision of one altimeter to be set to an appropriate QNH setting when flying at or near to the Minima Safe Altitude (particularly for unpressurised single crew aircraft) would be a prudent precaution.
 - 4.4 Cross checking of altimeters at appropriate intervals by all flight deck crew during climb and descent.
 - 4.5 Instructions requiring the co-pilot to advise the commander that he/she is approaching the assigned altitude or level.
 - 4.6 An instruction requiring the crew to inform ATC, prior to commencement of a radar approach, of the intention to use QNH settings throughout the procedure.
 - 4.7 Procedures for use of Altitude Alert Systems, if fitted.

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APPENDIX E

EN-ROUTE PERFORMANCE - 'DRIFT-DOWN'

- 1 Operators should be aware of the routes on which the en-route performance of their aircraft, following the failure of one or two engines, will be critical and should include instructions relating to such routes in their operations manuals in order to reduce the risks which could arise from indecision or error in the case of engine failure.

- 2 In the case of critical routes it may, in some cases, be possible to regulate the aircraft's planned take-off weight to such an extent that its drift-down performance following engine-failure (in the case of turbine-engine aircraft from a height not exceeding the maximum re-light altitude) will enable it to clear all obstacles on its route by the required margin regardless of the point at which the failure occurs. In other cases it may be necessary to calculate a critical point, or a number of critical points, which would determine the action to be taken in the event of engine failure at any given position, i.e. turn back, continue along the planned route or divert along an alternative route.

- 3 Instructions should take into account the accuracy of navigation which may be expected of the flight crew in view of the crew complement and the aids available. Account should also be taken of the effect of varying meteorological conditions. Assumed winds and temperatures used in the calculation of the critical point(s) must be indicated because, if forecast or actual conditions differ from these used at the planning stage, the commander may require to amend the drift-down procedure.

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APPENDIX F

NOISE ABATEMENT PROCEDURES

- 1 Noise abatement regulations frequently require special handling techniques and routings after take-off. The flight manuals of the more recently certificated aeroplanes contain performance data related to noise abatement procedures. Details of the procedures for each airfield or runway used by the operator, for which noise abatement regulations exist, should be provided in the operations manual. Instructions to ignore noise abatement procedures in emergency situations should also be included.

- 2 Where, in exceptional circumstances, it may be appropriate in the course of noise abatement procedures to start a turn at less than 500 ft agl, pilots should be given suitable instructions about restricting the angle of bank. Pilots should also be instructed not to reduce thrust below 500 ft agl. Above 500 ft agl thrust should be reduced in accordance with the aircraft manufacturers instructions. In the absence of such guidance, thrust should not be reduced to an extent that would result in a gross gradient of climb of less than 4%.

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APPENDIX G

MAINTENANCE AGREEMENT

- 1 Where an operator chooses to contract maintenance to another organisation, a written agreement must be drawn up indicating the divisions of responsibility between the two parties for the overall support of the aircraft and for compliance with statutory regulations and other relevant requirements.
- 2 The purpose of the agreement is to demonstrate a firm commitment by the two parties to the maintenance support of the aircraft in the operation for which application has been made for an Air Operator's Certificate.
- 3 It is strongly recommended that the portions of the agreement dealing with maintenance identify clearly those tasks which are to be accomplished by the contractor and those tasks which will remain the responsibility of the operator. This is particularly necessary where for example; the operator retains responsibility for line maintenance or spares provision.
- 4 The agreement should address the following matters:
 - (a) general arrangements for support of the operation by the maintenance organisation, and for technical liaison between operator and Maintenance Organisation;
 - (b) accomplishment of maintenance at the approved locations of the maintenance organisation;
 - (c) provision of appropriately approved/licensed maintenance personnel sufficient in numbers for the completion and certification of scheduled maintenance, the rectification of defects and the completion of duplicate inspections;
 - (d) training of maintenance personnel and, where necessary, the operator's flight crews;
 - (e) arrangements for line maintenance and ground handling at the operator's route stations, including major unscheduled arisings such as engine changes and defects requiring major dismantling or jacking;
 - (f) control and development of the Maintenance Schedule in response to service experience and manufacturers recommendations, the management and operation of reliability programmes, the preparation of documentation needed to implement the schedule and the arrangements for granting variations to the maintenance schedule requirements;
 - (g) airworthiness occurrence control and reporting to the manufacturer and the Authority including MOR, and the control of deferred and repetitive defects;

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- (h) maintaining logbooks, component service history, maintenance and other technical records and the transmission of Sector Record page information from the operator to the maintenance organisation;
- (i) manufacturer's Service Bulletins/Information received, assessed and incorporated into modifications and manufacturer's technical programmes;
- (j) compliance with mandatory requirements including mandatory modifications and inspections, and Airworthiness Directives, and for responding to other maintenance and airworthiness requirements published by the responsible Authorities;
- (k) provision of spares, their storage and acceptance;
- (l) ensuring the availability of the necessary tools and equipment to complete the scheduled maintenance and any other work arising under the terms of the agreement;
- (m) provision of suitable maintenance accommodation at all locations where maintenance take place, appropriate to the task;
- (n) quality auditing of the maintenance arrangements, including in particular the systems and procedures employed to achieve the control of airworthiness, at main base, line stations and en-route wherever support and ground handling takes place.

Details of the financial aspect of maintenance agreements may be omitted.

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APPENDIX H

QUALITY ASSURANCE CHECKS

- 1 Engineering quality assurance procedures should ensure that sample checks identified in the paragraphs below are carried out.

Note: This summary of quality assurance checks is not exhaustive but is intended to provide an indication of the range of checks necessary. Additional or difference checks may be needed in respect of particular support arrangements.

1.1 Checks on Aircraft whilst undergoing Scheduled Maintenance for:

- (a) compliance with maintenance schedule requirements and ensuring that only worksheets and cards reflecting the latest amendment standard are used;
- (b) completion of worksheets, including the transfer of defects to additional worksheets; their control, and final assembly. Action taken in respect of items carried forward not completed during the particular inspection or maintenance task;
- (c) compliance with manufacturer's and company standard specifications;
- (d) standards of inspection and workmanship;
- (e) conservation of aircraft corrosion prevention techniques and other protective processes;
- (f) procedures adopted during shift-changeover to ensure continuity of inspection and responses;
- (g) precautions taken to ensure that all aircraft are checked, on completion of any work or maintenance, for loose tools and miscellaneous small items such as split pins, wire, rivets, nuts, bolts and other debris, general cleanliness and housekeeping.

1.2 Checks on Aircraft in Service for:

- (a) compliance with company approved practices for cargo restraint, load distribution and spreading such that the approved modifications for cargo configurations are observed.
- (b) procedures to ensure that the APS weight data in use reflects the aircraft configuration and weight and balance schedule,

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- (c) satisfactory condition of cargo/baggage compartments and their linings, cargo handling and restraint equipment and special provisions for the carriage of livestock and attendants,
- (d) continuing compliance with Mauritius Civil Airworthiness Notices in respect of cabin and other safety provisions.

1.3 Checks on Technical Logs for:

- (a) correct completion of sector record pages and their transmission to technical records;
- (b) satisfactory rectification of defects for their deferral in accordance with the MEL and company procedures. The recording of component details and stores control numbers, cross-referencing to deferred defect records and additional worksheets where appropriate and the inclusion of rectification details in the Sector Record Page;,
- (c) compliance with required reporting procedures in the event of flights taking place after rectification of defects without issue of a Certificate of release to Service;
- (d) certification of modifications including the installation of role equipment such as stretchers and conversion of the aircraft from passenger to cargo roles, and return to passenger;
- (e) correct use of maintenance and inspection control systems included in the technical log for the completion of scheduled and pre-planned tasks between Scheduled Maintenance Inspections;
- (f) operation of systems for recording external damage to the aircraft which has been inspected and is considered safe for further operation.

1.4 Checks on Technical Service Information for:

- (a) adequacy of aircraft manuals and other technical information appropriate to each aircraft type, including engines, propellers and other equipment, and the continuing receipt of revisions and amendments;
- (b) assessment of manufacturers service information, determining its application to the Operator's aircraft and the recording of compliance or embodiment in each aircraft;
- (c) maintaining a register of manuals and technical literature held within the company, their locations and current amendment states,
- (d) ensuring that all company manuals and documents, both technical and procedural, are kept up to date.

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1.5 Checks on the Operator's General Airworthiness Control Procedures for:

- (a) responding to the requirements of Airworthiness Directives, mandatory modifications and inspections, DCA Airworthiness Notices and special fleet checks instituted in response to occurrences etc;
- (b) monitoring company practices in respect of scheduling or pre-planning maintenance tasks to be carried out in the open, and adequacy of the facilities provided;
- (c) effective completion of maintenance reviews at intervals required by the approved maintenance schedule and the availability of information to the certificate signatory;
- (d) operation of the defects analysis system for the operator's airframes, engines and systems and its integration with the system for mandatory occurrence reporting; the highlighting of repetitive defects and the control of deferred defects;
- (e) approval of personnel to perform inspections and maintenance tasks on the Operator's aircraft and for the issue of CMR and CRS; the effectiveness and adequacy of training and the recording of personnel experience, training and qualifications for grant of authorisation;
- (f) the effectiveness of technical instructions issued to maintenance staff;
- (g) the adequacy of staff in terms of qualifications, numbers and ability in all areas of support for the operator which affect airworthiness;
- (h) the completeness of the quality audit programme;
- (i) compliance with the requirements of the approved Maintenance Schedule, including maintenance/inspection periods, component overhaul/test/calibration control, records of cycles/landings etc and for granting variations at the request of the operator;
- (j) maintaining logbooks and other required records on behalf of the operator;
- (k) ensuring that major and minor repairs are only carried out in accordance with approved repair schemes and practices.

1.6 Checks on Stores and Storage Procedures for:

- (a) the adequacy of stores and storage conditions for rotatable components, small parts, perishable items, flammable fluids, engines and bulky assemblies;
- (b) the procedure for examining incoming components, materials and items for conformity with order, release documentation and approved source;

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- (c) the 'batching' of goods and identification of raw materials, the acceptance of part life items into stores, requisition procedures;
- (d) labelling procedures, including the use of serviceable/unserviceable/repairable labels, and their certification and final disposal after installation. Also labelling procedures for components which are serviceable but 'part life' only;
- (e) the internal release procedure to be used when components are to be forwarded to other locations within the organisation;
- (f) the procedure to be adopted for the release of goods or overhauled items to other organisations. (This procedure should also cover items being sent away for rectification or calibration);
- (g) the procedure for the requisitioning of tools together with the system for ensuring that the location of tools is known at all times;
- (h) control of shelf life and storage conditions in the stores. Control of the free-issue dispensing of standard parts, identification and segregation.

1.7 **Checks on Maintenance Facilities for:**

- (a) cleanliness, state of repair and correct functioning of hangars, hangar facilities and special equipment, and the maintenance of mobile equipment;
- (b) adequacy and functioning of special services and techniques including welding, NDT, weighing, painting;
- (c) viewer/printer equipment provided for use with micro-fiche, micro-film and compact disk ensuring regular maintenance takes place and an acceptable standard of screen reproduction and printed copy are achieved;
- (d) the adequacy of special tools and equipment appropriate to each type of aircraft, including engines, propellers and other equipment.

1.8 **Checks on Line Stations, in addition to the foregoing as applicable, for:**

- (a) the adequacy of facilities and staff;
- (b) the provision of covered accommodation for aircraft when maintenance is undertaken which requires a controlled environment, and for the accomplishment of work in the open where this is unavailable;
- (c) the cleanliness, state of repair, correct functioning and maintenance of ground support equipment including ground de-icing/anti-icing equipment;

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- (d) the effectiveness of any sub-contracted arrangements for ground handling, servicing and maintenance support and compliance with the operator's contracted arrangements;
- (e) quality monitoring of fuel supplies including supplier checks and uplift contamination checks; the effectiveness and completion of fuel tank water drain checks;
- (f) the care and maintenance of cargo containers, freight nets, pallets and other cargo equipment;
- (g) the currency, scope and effectiveness of locally raised technical instructions and the procedure for bringing them to the notice of maintenance personnel;
- (h) adequacy of the technical publications held at the station for the operator's aircraft, their currency and procedures for amendment;
- (i) the accuracy and control of worksheets or cards, to ensure that only upto-date issues are used.

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APPENDIX I

AVIATION SECURITY TRAINING SYLLABUS-ALL CREW

- 1 The security training programme established by the operator shall include at least the following elements
 - (a) Determination of the seriousness of any occurrence
 - (b) Crew communication and coordination
 - (c) Appropriate self-defence responses
 - (d) Use of non-lethal protective devices assigned to crew members whose use is authorised by the Authority
 - (e) Potentially disruptive passengers
 - (f) Understanding of behaviour of terrorists so as to facilitate the ability of crew members to cope with hijacker behaviour and passenger responses
 - (g) Live situational training exercises regarding various threat conditions
 - (h) Flight deck procedures to protect the aeroplane
 - (i) Aeroplane search procedures and guidance on least-risk bomb locations where practicable.
 - (j) Recognition of firearms, explosives and incendiary devices and their components
 - (k) Discreet communication to flight crew by cabin crew in the event of suspicious activity or security breaches in the passenger cabin.
 - (l) Procedures in relation to the flight crew compartment access and exit.
 - (m) Procedures in relation to a bomb threat or warning, when the aircraft is on the ground or in flight.

- 2 **REFRESHER TRAINING**
 - (a) Current threat assessment.
 - (b) Review of recent incidents: lessons to be learned.

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- (c) Government advice.
- (d) Reminders of company emergency procedures, manual amendments, etc.
- (e) Update of initial training course as appropriate.

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APPENDIX J

DANGEROUS GOODS TRAINING

1 DANGEROUS GOODS TRAINING FOR OPERATORS

- 1.1 An operator, regardless of it holding an approval to carry dangerous goods, shall establish and maintain staff training programmes, as required by the ICAO Technical Instructions. These training programmes shall be approved by the Authority.
- 1.2 An operator shall ensure that all staff who receive training undertake a test to verify understanding of their responsibilities.
- 1.3 Training must be provided or verified upon the employment of personnel identified in accordance with the applicable column of Table 1 or Table 2 below.
- 1.4 An operator shall ensure that all staff who require dangerous goods training receive recurrent training at intervals of not longer than two years.
- 1.5 An operator shall ensure that records of dangerous goods training are maintained for all staff trained as required by the ICAO Technical Instructions and shall include the following:
 - (a) the individual's name;
 - (b) the most recent training completion date;
 - (c) a description, copy or reference to training materials used to meet the training requirements;
 - (d) the name and address of the organisation providing the training; and
 - (e) evidence which shows that a test has been completed satisfactorily.
- 1.6 The records of training must be made available upon request by the Authority.
- 1.7 An operator shall ensure that his handling agent's staff is trained in accordance with the applicable column of Table 1 or Table 2 below.

2 INSTRUCTOR QUALIFICATIONS

- 2.1 Instructors of initial and recurrent dangerous goods training programmes must have adequate instructional skills and have successfully completed a dangerous goods training programme.

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2.2 Instructors delivering initial and recurrent dangerous goods training programmes must at least every 24 months deliver such courses, or in the absence of this, attend recurrent training.

3 OPERATORS NOT HOLDING A PERMANENT APPROVAL TO CARRY DANGEROUS GOODS

3.1 Operators not holding a permanent approval to carry dangerous goods shall ensure that:

3.1.1 staff who are engaged in general cargo and baggage handling have received training to carry out their duties in respect of dangerous goods. As a minimum, this training must cover the areas identified in Column 1 of Table 1 and the depth of training must be sufficient to ensure awareness and knowledge of the hazards associated with dangerous goods, identification of dangerous goods and requirements for the carriage of dangerous goods by passengers.

3.1.2 **the following personnel:**

- (a) crew members;
- (b) passenger handling staff; and
- (c) security staff employed by the operator who deal with the screening of passengers and their baggage;

have received training which, as a minimum, must cover the areas identified in Column 2 of Table 1 and the depth of training must be sufficient to ensure awareness and knowledge of the hazards associated with dangerous goods, identification of dangerous goods and requirements for the carriage of dangerous goods by passengers.

Table 1

Areas of Training	1	2
General Philosophy	X	X
Limitations on Dangerous Goods in Air Transport		X
Package Marking and Labelling	X	X
Dangerous Goods in Passengers' Baggage	X	X
Emergency Procedures		
<i>Note: "X" indicates an area to be covered</i>		

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4 OPERATORS NOT HOLDING A PERMANENT APPROVAL TO CARRY DANGEROUS GOODS

4.1 Operators holding a permanent approval to carry dangerous goods shall ensure that:

4.1.1 staff who are engaged in the acceptance of dangerous goods have received training and are qualified to carry out their duties. As a minimum this training must cover the areas identified in Column 1 of Table 2 and the depth of training must be sufficient to ensure staff is able to make decisions regarding the acceptance or refusal of the carriage of dangerous goods.;

4.1.2 staff who are engaged in ground handling, storage and loading of dangerous goods have received training to enable them to carry out their duties in respect of dangerous goods. As a minimum this training must cover the areas identified in Column 2 of Table 2 and the depth of training must be sufficient to ensure awareness and knowledge of the hazards associated with dangerous goods, identification of dangerous goods and handling and loading of dangerous goods;

4.1.3 staff who are engaged in general cargo and baggage handling have received training to enable them to carry out their duties in respect of dangerous goods. As a minimum this training must cover the areas identified in Column 3 of Table 2 and the depth of training must be sufficient to ensure awareness and knowledge of the hazards associated with dangerous goods, identification of dangerous goods, handling and loading of dangerous goods and requirements for the carriage of dangerous goods by passengers;

4.1.4 flight crew members have received training which, as a minimum, must cover the areas identified in Column 4 of Table 2. The depth of training must be sufficient to ensure awareness and knowledge of the hazards associated with dangerous goods and how they should be carried on an aircraft; and

4.1.5 the following personnel:

- (a) passenger handling staff;
- (b) security staff employed by the operator who deal with the screening of passengers and their baggage; and
- (c) crew members other than flight crew members; have received training which, as a minimum, must cover the areas identified in Column 5 of Table 2. The depth of training must be sufficient to ensure awareness and knowledge of the hazards associated with dangerous goods, requirements for carriage of dangerous goods by passengers or, more generally, their carriage on an aircraft.

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Table 2

Areas of Training	1	2	3	4	5
General Philosophy	X	X	X	X	X
Limitations on Dangerous Goods in Air Transport	X	X		X	X
Classification of Dangerous Goods	X				
List of Dangerous Goods	X	X		X	
General Packing Requirements and Packing Instruction	X				
Packaging Specifications and Markings	X				
Package Marking and Labelling	X	X	X	X	X
Documentation from the Shipper	X				
Acceptance of Dangerous Goods, including the Use of Checklist	X				
Storage and Loading Procedures	X	X	X	X	
Inspections for Damage or Leakage and Decontamination Procedures	X	X			
Provision of Information to Commander	X	X		X	
Dangerous Goods in Passengers' Baggage	X	X	X	X	X
Emergency Procedures	X	X	X	X	X
<i>Note: "X" indicates an area to be covered</i>					

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APPENDIX K1

FLIGHT SAFETY DOCUMENTS SYSTEM

1 ORGANISATION

- 1.1 A flight safety documents system should be organised according to criteria which are essential to provide easy access to information required for flight and ground operations contained in the various operational documents comprising the system, as well as to manage the distribution and revision of operational documents.
- 1.2 Information contained in a flight safety documents system should be grouped according to the importance and use of the information, as follows:
- (a) time critical information e.g. information that can jeopardize the safety of the operation if not immediately available e.g. Flight Staff Instructions, Internal Notice To Airmen (INTAM).
 - (b) time sensitive information e.g. information that can affect the level of safety or delay the operation if not available in a short time period.
 - (c) frequently used information e.g. Operations Manual, Operator's Policies, QRH etc.
 - (d) reference information, e.g. information that is required for the operation but does not fall under (b) or (c) above; and
 - (e) information that can be grouped based on the phase of operation in which it is used.
- 1.3 Time critical information should be placed early and prominently in the flight safety documents system.
- 1.4 Time critical information, time sensitive information, and frequently used information should be placed in cards and quick-reference guides.

2 VALIDATION

- 2.1 The flight safety documents system should be validated before deployment, under realistic conditions. Validation should involve the critical aspects of the information use, in order to verify its effectiveness. Interaction among all groups that can occur during operations should also be included in the validation process.

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3 DESIGN

- 3.1 A flight safety documents system should maintain consistency in terminology, and in the use of standard terms for common items and actions.
- 3.2 Operational documents should include a glossary of terms, acronyms and their standard definition updated on a regular basis to ensure access to the most recent terminology. All significant terms, acronyms and abbreviation included in the flight documents system should be defined.
- 3.3 A flight safety documents system should ensure standarization across documents types, including writing style, terminology use of graphics and symbols, and formatting across documents. This includes consistent location specific types of information, consistent use of units of measurement and consistent use of codes.
- 3.4 A flight safety documents system should include a master index to locate, in a timely manner, information included in more than one operational document.

Note: The master index must be placed in the front of each document and consist of no more than three levels of indexing. Pages containing abnormal and emergency information must be tabbed for direct access.

- 3.5 A flight safety documents system could comply with the requirements of the operator's quality system, where applicable.

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APPENDIX K2

ORGANIZATION AND CONTENTS OF AN OPERATION MANUAL

1 ORGANIZATION

An operations manual shall be organized with the following structure:

- (a) General;
- (b) Aircraft operating information;
- (c) Routes and aerodromes; and
- (d) Training.

2 CONTENTS

The operations manual shall contain at the least the following:

2.1 General

- 2.1.1 Instructions outlining the responsibilities of operations personnel pertaining to the conduct of flight operations.
- 2.1.2 Rules limiting the flight time and flight duty periods and providing for adequate rest periods for flight crew members and cabin crew
- 2.1.3 A list of the navigational equipment to be carried including any requirements relating to operations in RNP airspace.
- 2.1.4 Where relevant to the operations, the long-range navigation procedures, engine failure procedure for ETOPS and the nomination and utilization of diversion aerodromes.
- 2.1.5 The circumstances in which a radio listening watch is to be maintained.
- 2.1.6 The method for determining minimum flight altitudes.
- 2.1.7 The methods for determining aerodrome operating minima.
- 2.1.8 Safety precautions during refueling with passengers on board.
- 2.1.9 Ground handling arrangements and procedures.
- 2.1.10 Procedures for pilots-in-command in observing an accident.

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- 2.1.11 The flight crew for each type of operation including the designation of the succession of command.
- 2.1.12 Specific instructions for the computation of the quantities of fuel and oil to be carried, having regard to all circumstances of the operation including the possibility of the failure of one or more powerplants while en route.
- 2.1.13 The conditions under which oxygen shall be used and the amount of oxygen determined in accordance with the ANO requirements.
- 2.1.14 Instructions for mass and balance control.
- 2.1.15 Instructions for the conduct and control of ground de-icing/anti-icing operations.
- 2.1.16 The specifications for the operational flight plan.
- 2.1.17 Standard operating procedures (SOP) for each phase of flight.
- 2.1.18 Instructions on the use of normal checklists and the timing of their use.
- 2.1.19 Departure contingency procedures.
- 2.1.20 Instructions on the maintenance of altitude awareness and the use of automated or flight crew altitude call-out.
- 2.1.21 Instructions on the use of autopilots and auto throttles in IMC.
- 2.1.22 Instructions on the clarification and acceptance of ATC clearances, particularly where terrain clearance is involved.
- 2.1.23 Departure and approach briefings.
- 2.1.24 Procedures for familiarization with areas, route and aerodromes.
- 2.1.25 Stabilized approach procedure.
- 2.1.26 Limitation on high rates of descent near the surface.
- 2.1.27 Conditions required to commence or to continue an instrument approach.
- 2.1.28 Instructions for the conduct of precision and non-precision instrument approach procedures.
- 2.1.29 Allocation of flight crew duties and procedures for the management of crew workload during night and IMC instrument approach and landing operations.
- 2.1.30 Instructions and training requirements for the avoidance of controlled flight into terrain and policy for the use of the ground proximity warning system (GPWS).

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2.1.31 Policy, instructions, procedures and training requirements for the avoidance of collisions and the use of the airborne collision avoidance system (ACAS).

Note: Procedures for the operation of ACAS are contained in PANS-OPS (Doc 8168), Volume 1, Part VIII, Chapter 3, and in PANS-ATM (Doc 4444), Chapters 12 and 15.

2.1.32 Information and instructions relating to the interception of civil aircraft including:

(a) procedures, for pilots-in command of intercepted aircraft; and b) visual signals for use by intercepting and intercepted aircraft.

2.1.33 For aeroplanes intended to be operated above 15 000 m (49 000 ft):

(a) information which will enable the pilot to determine the best course of action to take in the event of exposure to solar cosmic radiation; and

(b) procedures in the event that a decision to descend is taken, covering:

(1) the necessity of giving the appropriate ATS unit prior warning of the situation and of obtaining a provisional descent clearance; and

(2) the action to be taken in the event that communication with the ATS unit cannot be established or is interrupted.

2.1.34 Details of the accident prevention and flight safety programme including a statement of safety policy and the responsibility of personnel.

2.1.35 Information and instructions on the carriage of dangerous goods, including action to be taken in the event of an emergency.

Note: *Guidance material on the development of policies and procedures for dealing with dangerous goods incidents on board aircraft is contained in Emergency Response Guidance for Aircraft Incidents involving Dangerous Goods (Doc 9481)*

2.1.36 Security instructions and guidance.

2.1.37 The search procedure checklist

2.2 Aircraft operating information

2.2.1 Certification limitations and operating limitations.

2.2.2 The normal, abnormal and emergency procedures and checklists to be used by the flight crew

2.2.3 Operating instructions and information on climb performance with all engines operating

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- 2.2.4 Flight planning data for pre-flight and in-flight planning with different thrust/power and speed settings.
- 2.2.5 Instructions and data for mass and balance calculations.
- 2.2.6 Instructions for aircraft loading and securing of load.
- 2.2.7 Aircraft systems, associated controls and instructions for their use
- 2.2.8 The minimum equipment list and configuration deviation list for the aeroplane types operated and specific operations authorized, including any requirements relating to operations in RNP airspace.
- 2.2.9 Checklist of emergency and safety equipment and instructions for its use.
- 2.2.10 Emergency evacuation procedures, including type specific procedures, crew coordination, assignment of crew's emergency positions and the emergency duties assigned to each crew member.
- 2.2.11 The normal, abnormal and emergency procedures to be used by the cabin crew, the checklists relating thereto and aircraft systems information as required, including a statement related to the necessary procedures for the coordination between flight and cabin crew.
- 2.2.12 Survival and emergency equipment for different routes and the necessary procedures to verify its normal functioning before take-off, including procedures to determine the required amount of oxygen and the quantity available.
- 2.2.13 The ground-air visual signal code for use by survivors,

2.3 Routes and aerodromes

- 2.3.1 A route guide to ensure that the flight crew will have, for each flight, information relating to communication facilities, navigation aids, aerodromes, instrument approaches, instrument arrivals and instrument departures as applicable for the operation, and such other information as the operator may deem necessary for the proper conduct of flight operations.
- 2.3.2 The minimum flight altitudes for each route to be flown.
- 2.3.3 Aerodrome operating minima for each of the aerodromes that are likely to be used as aerodromes of intended landing or as alternate aerodromes.
- 2.3.4 The increase of aerodrome operating minima in case of degradation of approach or aerodrome facilities.
- 2.3.5 The necessary information for compliance with all flight profiles required by

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regulations, including but not limited to, the determination of:

- (a) take-off runway length requirements for dry, wet and contaminated conditions, including those dictated by system failures which affect the take-off distance;
- (b) take-off climb limitations;
- (c) en-route climb limitations;
- (d) approach climb limitations and landing climb limitations;
- (e) landing runway length requirements for dry, wet and contaminated conditions, including systems failures which affect the landing distance; and
- (f) supplementary information, such as tire speed limitations.

2.4 Training

2.4.1 Details of the flight crew training programme

2.4.2 Details of the cabin crew duties training programme

2.4.3 Details of the flight operations officer/flight dispatcher training programme when employed in conjunction with a method of flight supervision

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APPENDIX L

FLIGHT OPERATIONS OFFICER/ FLIGHT DISPATCHER (FOO/FD)

1 INTRODUCTION

- 1.1 Operators are required to demonstrate an adequate organization method of control and supervision of flight operation. A flight operations officer/flight dispatcher is normally employed to provide supervision of flight and to act as a close link between aircraft in flight and the ground services, and also between the aircrew and the operators' ground staff.
- 1.2 Mauritius does not issue flight operations officer/flight dispatcher licences. Flight operations officers/Flight dispatcher applicants must meet the criteria established in this Appendix.

2 BASIC REQUIREMENTS

2.1 Age

- 2.1.1 The applicant shall not be less than 21 years of age.

2.2 Knowledge

- 2.2.1 The applicant shall be able to demonstrate an appropriate level of knowledge in at least the subjects specified in paragraph 6. Such demonstration of knowledge shall be by means of an examination equivalent to that required to be undertaken by an applicant who has completed a course of training in accordance with paragraph 2.3.1 (c).

2.3 Experience

- 2.3.1 An applicant to be a flight operations officer/flight dispatcher shall have gained at least the following experience:
- (a) a total of 2 years of service in any one or in any combination of the capacities specified below, provided that in any combination of experience the period serviced in any capacity shall be at least one year:
- (1) a flight crew member in air transportation; or
 - (2) a meteorologist in an organization dispatching aircraft in air transportation; or
 - (3) an air traffic controller; or a technical supervisor of flight operations officers or air transportation flight operations systems; or

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- (b) at least one year' as an assistant in the dispatching of air transport aircraft; or
- (c) have satisfactorily completed a course of approved training.

2.3.2 The applicant shall have served under the supervision of a flight dispatcher for at least 90 working days within the six months immediately preceding the application.

2.4 Skill

2.4.1 The applicant shall have demonstrated the ability to:

- (a) make an accurate and operationally acceptable weather analysis from a series of daily weather maps and weather reports; provide an operationally valid briefing on weather conditions prevailing in the general neighbourhood of a specific air route; forecast weather trends pertinent to air transportation with particular reference to destination and alternates;
- (b) determine the optimum flight plan for a given segment, and create accurate manual and/or computer generated flight plans; and
- (c) provide operating supervision and all other assistance to a flight in actual or simulated adverse weather conditions, as appropriate to the duties of a flight operations officer/flight dispatcher.

3 ADDITIONAL OPERATOR-SPECIFIC REQUIREMENTS

3.1 In addition to the basic requirements given in paragraph 2 above, the operator shall not assign a flight operations officer/flight dispatcher to duty unless that person has:

- (a) satisfactorily completed a training course specific to the operator that addresses all the components of the operator's approved method of control and supervision of flight operations;
- (b) made, within the preceding 12 months, at least one qualification flight in the flight crew compartment of an aircraft over any area for which that individual is authorised to exercise flight supervision.

Note: For the purpose of the qualification flight, the flight operations officer/flight dispatcher must be able to monitor the flight crew intercommunication system and radio communications, and be able to observe the actions of the flight crew from the crew reporting time until the completion of the crew's post-flight duties.

- (c) demonstrated to the operator knowledge of:
 - (1) the contents of the operations manual;

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- (2) the radio equipment in the aircraft used; and
- (3) the navigation equipment in the aircraft used;
- (d) demonstrated to the operator knowledge of the following details concerning operations for which the officer is responsible and areas in which that individual is authorised to exercise flight supervision:
 - (1) the seasonal meteorological conditions and the sources of meteorological information;
 - (2) the effects of meteorological conditions on radio reception in the aircraft used;
 - (3) the peculiarities and limitations of each navigation system which is used by the operation; and
 - (4) the aircraft loading instructions;
- (e) demonstrated to the operator knowledge and skills related to human performance relevant to dispatch duties; and
- (f) demonstrated to the operator the ability to perform the duties specified in Chapter 2 of the AOCR.

4 AUTHORISATION BY THE OPERATOR

- 4.1 The operator shall establish a system to ensure that each flight operations officer/flight dispatcher assigned to duty continues to meet all the requirements in this Appendix.
- 4.2 The operator shall ensure that appropriate action is taken to suspend, vary or revoke the authorisation of a flight operations officer/flight dispatcher in the event that he or she fails to continue to meet the requirements of this Appendix.

5 MAINTAINING CURRENCY

- 5.1 To maintain currency, a flight operations officer/flight dispatcher must dispatch at least one flight every 90 consecutive days. A flight operations officer/flight dispatcher who fails to do so shall be required to dispatch at least one flight under the supervision of another flight operations officer/flight dispatcher prior to resuming duties.
- 5.2 A flight operations officer/flight dispatcher who has not dispatched at least one flight in the preceding 12 months shall be required to attend refresher training, pass a written assessment paper and dispatch at least one flight under the supervision of another flight operations officer/flight dispatcher prior to resuming duties.

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- 5.3 Every flight operations officer/flight dispatcher shall undergo a recurrent training programme approved by the Authority and pass a proficiency test conducted by the operator once every 24 months.

6 TRAINING SYLLABUS

- 6.1 An operator intending to develop a course of training to qualify flight operations officers/flight dispatchers in accordance with paragraph 2.3.1(c) shall submit the basic training syllabi for initial qualification training to the Authority for approval. The syllabi shall be part of AOC holders' operation manual and training manual. The training shall cover the contents specified below and include an examination at the end of the course.

FLIGHT OPERATION OFFICER/FLIGHT DISPATCHER

1 PHASE ONE – BASIC KNOWLEDGE

1.1 Civil air law and regulations

Certification of operators.
The Convention on International Civil Aviation (The Chicago Convention).
International air transport issues addressed by the Chicago Convention.
The International Civil Aviation Organization (ICAO).
Responsibility for aircraft airworthiness.
Regulatory provisions of the flight manual.
The aircraft minimum equipment list (MEL).
The operations manual.

1.2 Aviation Indoctrination

Regulatory.
Aviation terminology and terms of reference.
Theory of flight and flight operations.
Aircraft propulsion systems.
Aircraft systems.

1.3 Aircraft mass (weight) and performance

Basic principles for flight safety.
Basic mass (weight) and speed limitations.
Take-off runway requirements.
Climb performance requirements.
Landing runway requirements.
Buffet boundary speed limitations.

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1.4 Navigation

Position and distance; time.

True, magnetic and compass direction; gyro heading reference and grid direction. Introduction to chart projection: the Mercator projection; great circles on Mercator charts; other cylindrical projections; Lambert conformal conic projections; the polar stereographic projection.

ICAO chart requirements.

Charts used by a typical operator.

Measurement of airspeed; track and ground speed.

Use of slide-rules, computers and scientific calculators.

Measurement of aircraft altitude.

Point of no return; critical point; general determination of aircraft position.

Introduction to radio navigation; ground-based radar and direction-finding stations; relative bearings;

VOR/DME-type radio navigation; instrument landing systems.

Navigation procedures.

ICAO CNS/ATM systems (an overview)

1.5 Air traffic management

Introduction to air traffic management

Controlled airspace Flight rules ATC clearance;

ATC requirements for flight plans; aircraft reports.

Flight information service (FIS).

Alerting service and search and rescue.

Communications services (mobile, fixed).

Aeronautical information service (AIS).

Aerodrome and airport services.

1.6 Meteorology

Atmosphere; atmospheric temperature and humidity.

Atmospheric pressure; pressure-wind relationships.

Winds near the Earth's surface; wind in the free atmosphere; turbulence.

Vertical motion in the atmosphere; formation of clouds and precipitation.

Thunderstorms; aircraft icing.

Visibility and RVR; volcanic ash.

Surface observations; upper-air observations; station model.

Air masses and fronts; frontal depressions.

Weather at fronts and other parts of the frontal depression; other types of pressure system

General climatology; weather in the tropics.

Aeronautical meteorological reports; analysis of surface and upper-air charts.

Prognostic charts; aeronautical forecasts.

Meteorological service for international air navigation.

Field trip to local meteorological office.

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1.7 **Mass (weight) and balance control**

Introduction to mass and balance.
Load planning.
Calculation of payload and load sheet preparation.
Aircraft balance and longitudinal stability.
Moments and balance.
The structural aspects of aircraft loading.
Dangerous goods and other special cargo.
Issuing loading instructions.

1.8 **Transport of dangerous goods by air**

Introduction.
Dangerous goods, emergency and abnormal situations.
Source documents.
Responsibilities.
Emergency procedures.

1.9 **Flight planning**

Introduction to flight planning.
Turbo-jet aircraft cruise control methods.
Flight planning charts and tables for turbo-jet aircraft.
Calculation of flight time and minimum fuel for turbo-jet aircraft.
Route selection. Flight planning situations.
Reclearance.
The flight phases.
Documents to be carried on flights.
Flight planning exercises.
Threats and hijacking.
ETOPS.

1.10 **Flight monitoring**

Position of aircraft.
Effects of ATC reroutes.
Flight equipment failures.
En-route weather changes.
Emergency situations.
Flight monitoring resources.
Position reports.
Ground resource availability.

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1.11 Communications – Radio

International aeronautical telecommunications service.
Elementary radio theory.
Aeronautical fixed service.
Aeronautical mobile service.
Radio navigation service.
Automated aeronautical service.

1.12 Human Factors

The meaning of Human Factors.
Dispatch resource management (DRM).
Awareness.
Practice and feedback.
Reinforcement.

1.13 Security (emergencies and abnormal situations)

Familiarity.
Security measures taken by airlines.
Procedures for handling threats, bomb scares, etc.
Emergency due to dangerous goods.
Hijacking.
Emergency procedures.
Personal security for the FOO/FD.

2 PHASE TWO – APPLIED PRACTICAL TRAINING

2.1 Applied practical training

Applied practical flight operations.
Simulator LOFT observation and synthetic flight training.
Flight dispatch practices (on-the-job training)
Route familiarization.

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APPENDIX M

ADDITIONAL REQUIREMENTS FOR APPROVED OPERATIONS BY SINGLE-ENGINE TURBINE-POWERED AEROPLANES AT NIGHT AND/OR IN INSTRUMENT METEOROLOGICAL CONDITIONS (IMC)

1 TURBINE ENGINE RELIABILITY

1.1 Turbine engine reliability shall be shown to have a world fleet power loss rate of less than 1 per 100,000 engine hours.

1.1.1 Power loss rate should be determined as a moving average over a specified period (e.g. a 12-month moving average if the sample is large). *Power loss rate, rather than in-flight shut-down rate, is used as it is considered to be more appropriate for single-engine aeroplane.*

1.1.2 In determining power loss rate the actual period selected should reflect the global utilization and the relevance of the experience included (e.g. early data may not be relevant due to subsequent mandatory modifications which affected the power loss rate). After the introduction of a new engine variant and whilst global utilization is relatively low, the total available experience may have to be used to try to achieve a statistically meaningful average.

Note: Power loss in this context is defined as any loss of power, the cause of which may be traced to faulty engine or engine component design or installation, including design or installation of the fuel ancillary or engine control systems.

1.1.3 A reliability programme should be established covering the engine and associated systems. The engine programme should include engine hours flown in the period and in-flight shutdown rate for all causes and the unscheduled engine removal rate, both on a 12-month moving average basis. The event reporting process should cover all items relevant to the ability to operate safely at night and/or IMC. Any sustained adverse trend should result in an immediate evaluation by the operator in consultation with the Authority and the manufacturer with a view to determining actions to restore the intended safety level. The operator should develop a parts control programme with support from the manufacturer that ensures that the proper parts and configuration are maintained for single engine turbine-powered aeroplanes approved to conduct these operations. The programme includes verification that parts placed on an approved single engine turbine-powered aeroplane during parts borrowing or pooling arrangements, as well as those parts used after repair or overhaul, maintain the necessary configuration of that aeroplane approved for single engine operations.

1.1.4 In assessing turbine engine reliability, evidence should be derived from world fleet database covering as large a sample as possible of operations considered to be representative. Data from engine trend monitoring and event reports should also be monitored to ensure that there is no indication that the operator's experience is unsatisfactory.

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- 1.2 The operator shall be responsible for engine trend monitoring which should include the following:
- (a) an oil consumption monitoring programme based on manufacturers' recommendations; and
 - (b) an engine condition monitoring programme describing the parameters to be monitored, the method of the data collection and corrective action process, based on the manufacturer's recommendations. The monitoring is intended to detect turbine engine deterioration at an early stage before safe operation is affected.
- 1.3 To minimize the probability of in-flight engine failure, the engine shall be equipped with:
- (a) an ignition system that activates automatically, or is capable of being operated manually, for take-off and landing, and during flight in visible moisture;
 - (b) a magnetic particle detection or equivalent system that monitors the engine, accessories gearbox and reduction gearbox, and which includes a flight deck caution indication; and
 - (c) an emergency engine power control device that permits continuing operation of the engine through a sufficient power range to safely complete the flight in the event of any reasonably probable failure of the fuel control unit.

2 SYSTEMS AND EQUIPMENT

- 2.1 Single-engine turbine-powered aeroplanes approved to operate at night and/or in IMC shall be equipped with the following systems and equipment intended to ensure continued safe flight and to assist in achieving a safe forced landing after an engine failure, under all allowable operating conditions:
- (a) two separate electrical generating systems, each one capable of supplying all probable combinations of continuous in-flight electrical loads for instruments, equipment and systems required at night and/or in IMC;
 - (b) a radio altimeter;
 - (c) an emergency electrical supply system of sufficient capacity and endurance following loss of all generated power to, as a minimum:
 - (i) maintain the operation of all essential flight instruments, communication and navigation systems during a descent from the maximum certificated altitude in a glide configuration to the completion of a landing;
 - (ii) lower the flaps and landing gear, if applicable;

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- (iii) provide power to one pitot heater, which must serve an air speed indicator clearly visible to the pilot;
- (iv) provide for operation of the landing light specified in sub-paragraph (j) below;
- (v) provide engine restart, if applicable; and
- (vi) provide for the operation of the radio altimeter;
- (d) two attitude indicators, powered from independent sources;
- (e) a means to provide for at least one attempt at engine re-start;
- (f) airborne weather radar;
- (g) a certified area navigation system capable of being programmed with the positions of aerodromes and safe forced landing areas, and providing instantly available track and distance information to those locations;
- (h) for passenger operations, passenger seats and mounts which meet dynamically-tested performance standards and which are fitted with a shoulder harness or a safety belt with a diagonal shoulder strap for each passenger seat;
- (i) in pressurized aeroplanes, sufficient supplemental oxygen for all occupants for descent following engine failure at the maximum glide performance from the maximum certificated altitude to an altitude at which supplemental oxygen is no longer required;
- (j) a landing light that is independent of the landing gear and is capable of adequately illuminating the touchdown area in a night forced landing; and
- (k) an engine fire warning system.

3 OPERATIONAL AND MAINTENANCE PROGRAMME REQUIREMENTS

- 3.1 The approval to undertake operations by single-engine turbine-powered aeroplanes at night and/or in IMC specified in the air operator certificate will include the particular airframe/engine combinations, including the current type design standard for such operations, the specific aeroplane approved, and the areas or routes of such operations.
- 3.2 The operator's maintenance control manual shall include a statement of certification of the additional equipment required, and of the maintenance and reliability programme for such equipment, including the engine.

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4 OPERATIONS MANUAL AND ROUTE PLANNING

- 4.1 The flight manual shall include limitations, procedures, approval status and other information relevant to operations by single-engine turbine-powered aeroplanes at night and/or in IMC.
- 4.2 The operations manual shall include all necessary information relevant to operations by single-engine turbine-powered aeroplanes at night and/or IMC. This shall include all of the additional equipment, procedures and training required for such operations, route and/or area of operation and aerodrome information (including planning and operating minima).
- 4.3 Route planning should take account of all relevant information in the assessment of intended routes or areas of operations, including the following:
- (a) the nature of the terrain to be flown, including the potential for carrying out a safe forced landing in the event of an engine failure or major malfunction;
 - (b) weather information, including seasonal and other adverse meteorological influences that may affect the flight; and
 - (c) other criteria and limitations as specified by the Authority.
- 4.4 An operator should identify aerodromes or safe forced landing areas available for use in the event of engine failure, and the position of these shall be programmed into the area navigation system.

Note 1: A safe forced landing in this context means a landing in which it can reasonably be expected that it will not lead to serious injury or loss of life, even though the aeroplane may incur extensive damage.

Note 2: Operation over routes and in weather conditions that permit a safe forced landing in the event of an engine failure, as specified in Chapter 2 paragraph 27.1, is not required by paragraphs 4.3 and 4.4 above for aeroplanes approved in accordance with Chapter 2 paragraph 27.2. The availability of forced landing areas at all points along a route is not specified for these aeroplanes because of the very high engine reliability, additional systems and operational equipment, procedures and training requirements specified in this Appendix.

5 ROUTE LIMITATIONS OVER WATER

- 5.1 Operators of single-engine turbine-powered aeroplanes carrying out operations at night and/or in IMC should make an assessment of the route limitations over water. The distance from an area suitable for forced landing/ditching that the aeroplane may be operated should be determined, which equates to the glide distance from the cruise altitude to the forced landing area, following engine failure, assuming still air conditions. Additional distance may be included taking into account the likely

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prevailing conditions and the type of operation. This should include considerations for sea conditions, the survival equipment carried, the achieved engine reliability and the search rescue services available.

- 5.2 Any additional distance allowed beyond the glide distance should not exceed a distance equivalent to 15 minutes at the aeroplane's normal cruise speed.

6 MINIMUM EQUIPEMENT LIST

- 6.1 The minimum equipment list of an operator approved in accordance with AOCR Chapter 2 paragraph 27.2 shall specify the operating equipment required for night and/or IMC operations, and for day/VMC operations.

7 EVENT REPORTING

- 7.1 An operator approved for operations by single-engine turbine-powered aeroplanes at night and/or in IMC shall report all significant failures, malfunctions or defects to the Authority.

8 OPERATOR CERTIFICATION OR VALIDATION

- 8.1 The operator shall demonstrate the ability to conduct operations by single-engine turbine-powered aeroplanes at night and/or in IMC to the Authority.

- 8.2 The certification process should include the operator's ability to ensure adequacy of its procedures for normal, abnormal and emergency operations, including actions following engine, systems or equipment failures. In addition to the normal requirements for operator certification or validation, the following items should be addressed in relation to operations by single-engine turbine-powered aeroplanes:

- (a) proof of the achieved engine reliability of the aeroplane engine combination referred to in paragraph 1 above;
- (b) specific and appropriate training and checking procedures including those to cover engine failure/malfunction on the ground, after take-off and en-route and descend to a forced landing from the normal cruising altitude;
- (c) a maintenance programme which is extended to address the equipment and systems referred to in paragraph 2 above;
- (d) an MEL modified to address the equipment and system necessary for operations at night and/or in IMC;
- (e) planning and operating minima appropriate to the operations at night and/or in IMC;

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- (f) departure and arrival procedures and any route limitations;
- (g) pilot qualifications and experience; and
- (h) the operations manual, including limitations, emergency procedures, approved routes or areas of operation, the MEL and normal procedures related to the equipment referred to in Chapter 2 above.