TECHNICAL STANDARDS – Issue version (2024) NAMCATS: Part 121 – AIR TRANSPORT OPERATIONS: CARRIAGE ON AEROPLANES OF 20 OR MORE PASSENGERS OR CARGO

Document: NAMCATS-OPS-121/2024
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1. General

1.2 Section 227 of the Civil Aviation Act, 2016 (Act no. 6 of 2016 – hereinafter "the Act") empowers the Executive Director of Civil Aviation to issue technical standards for civil aviation "on such matters as may be prescribed". Section 227(3) of the Act further empowers the Executive Director of Civil Aviation to incorporate into a technical standard any international aviation standard or any amendment without publishing the text of such standard or any amendment "by mere reference" to the title, number and year of issue of such standard or amendment or to any other particulars by which such standard or amendment is sufficiently identified.

1.3 By way of Government Notice 11/2024 published in Government Gazette 8299 dated 1st February 2024, NAMCARS (amendment 2024) provides for Part 121 – "Air Transport Operations: Carriage on Aeroplanes of 20 or more Passengers or Cargo" (OPS-121). This Part 121 provides for the issue of technical standards as NAM-CATS-OPS-121.

1.4 The Executive Director of Civil Aviation has, pursuant to the empowerment mentioned above, issued technical standards relating to NAMCAR Part 121to be known as NAM-CATS-OPS-121 as further set out in the SCHEDULE herein.

1.5 To the extent possible, each reference to a technical standard in this document, is a reference to the corresponding regulation in the Namibian Civil Aviation Regulations.

Example: *(1) Technical standard 121.02.2 refers to Part 121, Subpart 02, Regulation 2, Technical standard 121.02.2(1) refers to sub-regulation (1) of Regulation 2.*

1.6 Where there is any perceived disparity of meaning or inconsistency between these technical standards and the regulations, the provisions of the regulations will take precedence.

1.7 Where there is a difference between a standard and procedure prescribed in an ICAO document and the Civil Aviation Technical Standards (CATS), the CATS standard will prevail.

2. GUIDANCE MATERIAL

2.1 Guidelines and recommendations in support of any Technical Standard are contained in schedules or appendices to, and/ or compliance notes inserted throughout, technical standards. These guidelines, upon release, are intended to provide recommendations and guidance to illustrate a means, but not necessarily the only means of complying with the regulations and technical standards. They may explain certain regulatory requirements by providing interpretive and explanatory materials. It is expected that service providers will document internal actions in their own operational manuals, to put into effect those, or similarly adequate, practices.

3. AMENDMENTS TO THE TECHNICAL STANDARDS

3.1 The NCAA Safety Division, Safety Promotion and Quality (SPQ) Department has responsibility for the technical content of this technical standard.

3.2 This Technical Standard is issued, and may only be amended, under the authority of the Executive Director of Civil Aviation.

3.3 Requests for changes to the content of this Technical Standard must be dealt with in accordance with the relevant Sub-Part of Part 3 of the NAMCARS. Requests shall be forwarded to the Executive Director and may come from:

(a) technical areas within NCAA; or
(b) aviation industry service providers or operators; or
(c) pilots and ATC staff,

3.4 The need to change the content of this technical standard may arise for any of the following reasons:

(a) to ensure safety;
(b) to ensure standardisation;
(c) to respond to changed NCAA regulations or standards;
(d) to respond to changes initiated by ICAO; or
(e) to accommodate proposed initiatives or new technologies, and for it to meet the validity and other requirements set out accordance with the relevant Sub-Part of Part 3 of the
NAMCARS.

3.5 NCAA may approve trials of new procedures or technologies to develop appropriate standards.

4. INTERNATIONAL STANDARDS

4.1 Based on the empowering provisions to the Executive Director in section 227 to incorporate into a technical standard any international aviation standard or any amendment without stating the text of such standard or amendment, by mere reference to the title, number and year of issue of such standard or amendment, or to any other particulars by which such standard or amendment is sufficiently identified the Technical Standards herein provide for the following international standards, recommended practices and procedures, as amended from time to time, are incorporated into the technical standards contained in this document:

(a) ICAO Annex 6 – Operation of Aircraft;

4.2 Differences from ICAO Standards, Recommended Practices and Procedures are published in the AIP.

These Technical Standards are effective from 01 October 2024.
Further access is available on NCAA website: https://www.ncaa.com.na
Enquiries: ops@ncaa.na

TOSKA SEM
EXECUTIVE DIRECTOR

NAM-CATS 121

Air Transport Operations: Carriage on Aeroplanes of 20 or more Passengers or Cargo

LIST OF TECHNICAL STANDARDS

8. Upgrade training on initial upgrade
9. Pilot qualification to operate in either pilot's seat
10. Regaining recency and requalification training for pilots
11. ACAS or ACAS II training including ACAS II cyclic training
12. Reduced Vertical Separation Minima (RVSM) training
13. Line oriented flight training (LOFT)
14. Training and qualifications for low visibility operations
15. Dangerous goods
16. Upset prevention and recovery training (UPRT)
17. Other courses of training as deemed appropriate by the Executive Director
18. Security training

121.03.4 ADVANCED QUALIFICATION PROGRAMME

121.03.5 AEROPLANE TYPE AND DIFFERENCES TRAINING

1. General
2. Operation of doors and exits
3. Evacuation slide training
4. Evacuation procedures and emergency situations
5. Pilot incapacitation
6. Safety equipment
7. Passenger briefing/safety demonstrations

121.03.6 OPERATOR INDUCTION TRAINING

1. Operator induction training
2. Flight deck observation flight
3. Senior cabin crew member training

121.03.8 RECURRENT TRAINING

1. Aviation - General
2. Roles and responsibilities
3. Safety procedures
4. Emergency procedures

5. Equipment overview
6. Aircraft specific
7. Drills

121.03.9 REFRESHER AND REQUALIFICATION TRAINING

1. Refresher training
2. Requalification training

121.03.10 EMPLOYEES AND SERVICE AGENT TRAINING

A. Flight Operations Officers and Flight Followers

1. Qualifications of flight operations officer instructors and examiners
2. Qualifications of a flight operations officer
3. Flight operation's officer generic training
4. Operator - specific flight operations officer and flight follower training - General
5. Flight operations officer training
6. Flight follower training
7. Operator's company induction syllabus for initial training
8. Aeroplane type specific training - FOO
9. Flight familiarisation training - FOO

B. Other Employees and Service Agent Training

1. Security training for ground personnel

121.03.11 TRAINING, CHECKING, CERTIFICATION AND VALIDITY PERIOD

1. Checking - flight crew members
2. Checking - cabin crew members
3. Checking and certification - flight operations officers and flight followers
4. Certification

121.04.2 OPERATIONS MANUAL

1. Structure of operations manual
2. Contents of operations manual

121.04.3 AIRCRAFT OPERATING MANUAL

1. Aeroplane operating manual contents
2. Standards operating procedures content

121.04.5 OPERATIONAL FLIGHT PLAN

1. Operational flight plan - General
2. Items in operational flight plan

121.04.7 RECORDS OF EMERGENCY AND SURVIVAL EQUIPMENT

1. Emergency and survival equipment list

121.04.8 TRAINING RECORDS

1. Training records

121.04.9 LOAD AND TRIM SHEET

1. Load and trim sheet

121.05.14 FIRST AID, EMERGENCY MEDICAL AND UNIVERSAL PRECAUTION KITS

1. Standards first aid kit contents
2. Medical kit contents
3. Universal precaution kit

121.05.18 FLIGHT RECORDERS

1. Flight recorders - General
2. Inspections of flight recorders
3. Flight recorder specifications
4. An aeroplane for which flight data recorders are required
5. FDR Parameters
6. Aeroplane for which voice or aural recorder is required
7. Combination recorders
8. Airborne image recorder
9. Aircraft data recording systems
10. Flight recorder data recovery

121.05.21 DATA LINK RECORDERS

1. Data link recorders - General

121.05.27 FIRE EXTINGUISHER

8. Quality assurance programme

121.01.6 LANGUAGE PROFICIENCY

1. General

(1) NCAA has adopted the ICAO language standards with respect to the minimum comprehension that would qualify any flight crew member to be assigned or accept an assignment that requires the use of the aeronautical language in the area or areas being travelled by such crew member. For the purposes of this TS that language is normally considered to be English unless it can be shown that another language is used by the aeronautical community at the location where the aeroplane is being operated. Notwithstanding this standard, the English language criteria specified in Part 61 still applies with respect to personnel licensing matters.

(2) In order to comply with regulation 121.01.6 in an area where English is not the language of radiotelephony, a language proficiency rating of level 4 or higher in the language used shall be demonstrated.

Note - *A full description of the proficiency testing benchmarks may be found in Document NAM-CATS 61.*

121.02.3 CREW PAIRING AND IN-FLIGHT RELIEF OF FLIGHT CREW MEMBERS

1. Crew pairing

(1) Flight crew member pairing restrictions establish minimum experience requirements for flight crew members. This is to ensure an entire flight crew is not comprised of flight crew members with very low operational experience on a new type and establishes the minimum level of total crew experience that shall be achieved. The intent is to provide each pilot with a certain period of time, measured in flight hours over a fixed time period, to consolidate their acquisition of new knowledge and skills. While that is the goal of the regulation this TS does make provision to allow pairing but only where an equivalent level of safety can be achieved.

(2) Flight crew pairing restrictions apply when any of the following situations occurs with respect to either the pilot-in-command (PIC) or the second-in-command (SIC) -

(a) initial appointment to PIC or SIC on a new aeroplane type;

(b) transition from a reciprocating-powered aeroplane to a turbo-prop or turbo-jet powered aeroplane;

(c) transition from a turbo-prop-powered aeroplane to a turbo-jet-powered aeroplane;

(d) transition to an aeroplane with control systems that use a technology or philosophy that differs significantly in access, interpretation or usage from that with which the pilot is familiar; and

(e) upon completion of training on a second aeroplane type, regardless of previous experience, when the pilot will be flying both types of aeroplanes in service.

(3) When crew pairing restrictions apply, they come into effect after completion of the pilot proficiency check (OPC) in the new position or new type, and remain in effect until the completion of the consolidation period for this flight crew member.

(4) Where one of the flight crew members is subject to pairing restrictions he or she shall be paired with a flight crew member that has satisfied the consolidation period requirements.

(5) Where crew pairing restrictions apply to the PIC and to the SIC, they may be paired together provided a training pilot or company check pilot qualified on that aeroplane type occupies the jump seat.

(6) All flight hours accumulated during line indoctrination training may be applied toward the consolidation time requirements.

(7) Consolidation period requirements are -

Note - *"Consolidation period" means that period of time following initial type training during which a pilot shall acquire a specified number of flight hours on the actual aeroplane.*

(a) the consolidation period shall take place in accordance with the time limits from the following sliding scale and shall begin upon successful completion of an initial OPC on each aeroplane type -

(i) 50 hours in 60 days;

(ii) 75 hours in 90 days; or

(iii) 100 hours in 120 days;

(b) if the consolidation period is not completed within 120 days, an extension to 150 days is permitted, at the operator's discretion, under the following conditions -

(i) on or before the 120th day, the operator shall make a ground evaluation of the pilot's level of competency;

(ii) when the pilot is assessed as not possessing a satisfactory level of competence, the pilot shall undergo additional training, followed by a supervised line operating flight, after which the consolidation period may be extended to 150 days; and

(iii) when the pilot's proficiency is judged satisfactory, the pilot shall be observed on at least one supervised line operating flight, after which, subject to (ii) above, the consolidation period may be extended to 150 days;

(c) if at any time before the consolidation period ends a pilot is assigned to another aeroplane type, the pilot shall undergo refresher training with a training pilot or check pilot before resuming the consolidation process; and

(d) if the pilot fails to complete the consolidation requirements in the maximum time of 150 days allowed, the complete line indoctrination and consolidation period requirements shall be repeated.

121.02.4 FLIGHT AND CABIN CREW MEMBER EMERGENCY DUTIES

1. Emergency evacuation demonstration

An emergency evacuation demonstration shall be commenced with the crew members seated at their assigned duty stations from where such crew members shall proceed to accomplish the following tasks in accordance with the approved emergency evacuation procedures -

(a) actual operation of all types of exits; and

(b) demonstration of the method used to operate a slide where fitted.

2. Full land evacuation demonstration

(1) The demonstration must be conducted either during the dark of the night or during daylight with the dark of the night simulated. If the demonstration is conducted indoors during daylight hours, it must be conducted with each window covered and each door closed to minimise the daylight effect. Illumination on the floor or ground may be used, but it must be kept low and shielded against shining into the aeroplane's window or doors.

(2) The aeroplane must be in normal ground attitude with landing gear extended.

(3) Unless the aeroplane is equipped with an off-wing descent means, stands or ramps may be used for descent from the wing to the ground. Safety equipment such as mats or inverted life rafts may be placed on the floor or ground to protect participants. No other equipment that is not part of the emergency evacuation equipment of the aeroplane may be used to aid the participants in reaching the ground.

(4) The aeroplane's normal electrical power sources must be de-energised.

(5) All emergency equipment for the type of passenger-carrying operation involved must be installed in accordance with the operations manual.

(6) Each external door and exit, and each internal door or curtain must be in position to simulate a normal take-off.

(7) A representative passenger load of persons in normal health must be used. At least 40 per cent of the passenger load must be females. At least 35 per cent of the passenger load must be over 50 years of age. At least 15 per cent of the passenger load must be female and over 50 years of age. Three life-size dolls, not included as part of the total passenger load, must be carried by passengers to simulate live infants 2 years old or younger. Crew members, mechanics, and training personnel, who maintain or operate the aeroplane in the normal course of their duties, may not be used as passengers.

(8) No passenger may be assigned a specific seat except as the Executive Director may require. Except as required by paragraph (12) of this technical standard, no employee of the operator may be seated next to an emergency exit.

(9) Seat belts and shoulder harnesses (as required) must be fastened.

(10) Before the start of the demonstration, approximately one-half of the total average amount of carry-on baggage, blankets, pillows, and other similar articles must be distributed at several locations in the aisles and emergency exit access ways to create minor obstructions.

(11) The seating density and arrangement of the aeroplane must be representative of the highest capacity passenger version of that aeroplane the operator operates or proposes to operate.

(12) Each crew member must be a member of a regularly scheduled line crew. Each crew member must be seated in the seat the crew member is normally assigned for take-off, and must remain in that seat until the signal for commencement of the demonstration is received.

(13) No crew member or passenger may be given prior knowledge of the emergency exits available for the demonstration.

(14) The operator may not practice, rehearse, or describe the demonstration for the participants nor may any participant have taken part in this type of demonstration within the preceding 6 months.

(15) The pre-take-off passenger briefing may be given in accordance with the operations manual. The passengers may also be warned to follow directions of crew members, but may not be instructed on the procedures to be followed in the demonstration.

(16) If safety equipment as allowed by paragraph (3) of this paragraph is provided, either all passenger and flight deck windows must be blacked out or all of the emergency exits must have safety equipment in order to prevent disclosure of the available emergency exits.

(17) Not more than 50 per cent of the emergency exits in the sides of the fuselage of an aeroplane that meet all of the requirements applicable to the required emergency exits for that aeroplane, may be used for the demonstration. Exits that are not to be used in the demonstration, must have the exit handle deactivated or must be indicated by red lights, red tape, or other acceptable means, placed outside the exits to indicate fire or other reason that they are unusable. The exits to be used must be representative of all of the emergency exits on the aeroplane and must be designated by the operator, subject to approval by the Executive Director. At least one floor level exit must be used.

(18) Except as provided in paragraph (3), all evacuees must leave the aeroplane by a means provided as part of the aeroplane's equipment.

(19) The operator's approved procedures and all of the emergency equipment that is normally available, including slides, ropes, lights, and megaphones, must be fully utilised during the demonstration, except that the flight crew must take no active role in assisting others inside the cabin during the demonstration.

(20) The evacuation time period is completed when the last occupant has evacuated the aeroplane and is on the ground. Evacuees using stands or ramps allowed by paragraph (3) above are considered to be on the ground when they are on the stand or ramp: Provided that the acceptance rate of the stands or ramps is no greater than the acceptance rate of the means available on the aeroplane for descent from the wing during an actual crash situation.

3. Partial land evacuation demonstration

(1) Operator Requirements

(a) The operator is to conduct the demonstration without passengers, using the operators approved procedures.

(b) 50% of the total exits must be opened, and 50% of slides deployed.

(c) Prepare those exits and slides for use within 15 seconds.

(d) The operator is to use crew members, randomly selected by the NCAA, who have completed the operator's training.

(e) If the demonstration is conducted during daylight, prior to the demonstration the cabin will be dimmed to simulate night time.

(2) Conduct of the Demonstration

(a) Crew members shall prepare for normal departure in accordance with the applicant's procedures.

(b) Crew members shall conduct the required passenger briefings, e.g. safety demonstration.

(c) Crew members shall be seated at assigned positions with their restraint systems fastened.

(d) The flight deck crew accomplishes all pre-take-off actions.

(e) The PIC informs the NCAA team leader over the PA system that the aircraft is ready for take-off.

(f) CAA ensures team is ready and in position.

(g) Pilot issues evacuation command.

(h) The NCAA inspectors begin timing with stop watches.

(i) At the 15 second point, the NCAA team leader issues a signal to stop the demonstration.

(j) CAA inspectors assigned to exits will report back as to whether exits were opened and slide prepared for use before the termination signal. Inspectors will also assess all operator's emergency procedures (e.g. shouted commands, door opening/blocking procedures, etc.).

(3) What constitutes an unsatisfactory demonstration:

(a) Exits, slides/slide rafts not prepared for use at the termination signal (15 seconds).

(b) Equipment malfunctions even if time limit was met.

(c) Deficiencies in crewmember effectiveness.

4. Water evacuation demonstration

The demonstration must assume that daylight hours exist outside the aeroplane, and that all required crew members are available for the demonstration.

(1) If the operations manual requires the use of passengers to assist in the launching of life rafts, the needed passengers must be on board the aeroplane and participate in the demonstration according to the manual.

(2) A stand must be placed at each emergency exit and wing, with the top of the platform at a height simulating the water level of the aeroplane following a ditching.

(3) After the ditching signal has been received, each evacuee must don a life vest according to the operations manual.

(4) Each life raft must be launched and inflated, according to the operations manual, and all other required emergency equipment must be placed in rafts.

(5) Each evacuee must enter a life raft, and the crew members assigned to each life raft must indicate the location of emergency equipment aboard the raft and describe its use.

(6) Either the aeroplane, a mock-up of the aeroplane or a floating device simulating a passenger compartment must be used as follows-

(a) if a mock-up of the aeroplane is used, it must be a life-size mock-up of the interior and representative of the aeroplane currently used by or proposed to be used by the operator, and must contain adequate seats for use of the evacuees. Operation of the emergency exits and the doors must closely simulate those on the aeroplane. Sufficient wing area must be installed outside the over-the-wing exits to demonstrate the evacuation; and

(b) if a floating device simulating a passenger compartment is used, it must be representative, to the extent possible, of the passenger compartment of the aeroplane used in operations. Operation of the emergency exits and the doors must closely simulate operation on that aeroplane. Sufficient wing area must be installed outside the over-the-wing exits to demonstrate the evacuation. The device must be equipped with the same survival equipment as is installed on the aeroplane, to accommodate all persons participating in the demonstration.

121.02.5 CABIN CREW MEMBER COMPLEMENT

1. Minimum number of cabin crew

An operator must ensure that, when carrying one or more passengers, not less than one cabin crew member is carried for every 50 passenger seats, or part thereof, installed on the same deck of the large aeroplane: Provided that the minimum number of cabin crew members carried is not less than the number of cabin crew members who actually participated in the emergency evacuation demonstration referred to in CAR 121.02.3 or were assumed to have taken part in the relevant analysis required during the certification of the large aeroplane.

121.02.6 OPERATION ON MORE THAN ONE TYPE OR VARIANT BY CABIN CREW MEMBER

1. Type or variant of aeroplane

(1) With the approval of the Executive Director, cabin crew may operate on four aeroplane types if emergency exits and safety equipment are similar.

(2) When assessing if a fourth aeroplane type is permissible the following factors must be taken into consideration -

(a) similarity of emergency procedure and drills; and

(b) similarity and location of emergency equipment.

(3) When assessing aeroplane variants as same types the following factors must be taken into consideration-

(a) the variant has the same type of exits with identical operating mechanisms;

(b) emergency procedures and drills are essentially the same; and

(c) emergency equipment on board each variant is essentially the same and that its location is standardised.

(4) Aeroplane variants not meeting these criteria are considered to be a separate aeroplane type.

121.02.10 FLIGHT CREW MEMBER QUALIFICATIONS

1. Operation on more than one aeroplane type

1. The provisions of this TS apply to flight crew members operating more than one aeroplane type under Part 121 and assumes the flight crew member will be operating two types of aeroplanes under this Part.

2. "Base aeroplane" means, with respect to the two types flown, the aeroplane for which a type rating was first obtained.

3. Refer to TS 61.17 in Document NAM-CATS 61 for the determination of aircraft types and variants and guidance as to the training required to obtain the type rating or convert to another type.

(1) The maximum number of different aircraft types having a maximum certificated take-off mass in excess of 5 700kg that may be operated under another Part is one if operating two types under this Part or two if operating one type under this Part. An operator shall establish the conditions under which a flight crew member will be permitted to operate the aircraft under the other Part.

(2) When considering operations of more than one type, an operator shall ensure that the differences and/or similarities of the aeroplanes concerned justify such operations, taking account of the following -

(a) the level of technology;

(b) operational procedures; and

(c) handling characteristics.

(3) An operator shall ensure that a flight crew member operating more than one type complies with all of the requirements prescribed in Sub-part 3 for each type unless the Executive Director has approved the use of credit(s) related to the training, checking and recent experience requirements.

(4) An operator shall specify appropriate procedures and/or operational restrictions, approved by the Executive Director, in the operations manual, for any operation on more than one type covering -

(a) the flight crew member's minimum experience level;

(b) the minimum experience level on one type before beginning training for and operation on another type;

(c) the process whereby flight crew qualified on one type will be trained and qualified on another type;

(d) all applicable recent experience requirements for each type.

(5) When a flight crew member operates more than one aeroplane type within one or more licence endorsements as specified in TS 61.17 of Document NAM-CATS 61, an operator shall ensure that -

(a) the minimum flight crew complement specified in the operations manual is the same for each type to be operated;

(b) a flight crew member does not operate more than two aeroplane types for which a separate licence endorsement is required; and

(c) only aeroplanes within one licence endorsement are flown in any one flight duty period unless the operator has established procedures to ensure adequate time for preparation.

(6) When a flight crew member operates more than one aeroplane type listed in TS 61.17 of Document NAM-CATS 61, but not within a single licence endorsement, an operator shall comply with the following -

(a) sub-paragraphs (4)(a), (b) and (c) above;

(b) before exercising the privileges of two licence endorsements -

(i) the flight crew member shall have completed two consecutive operator proficiency checks and shall have 500 hours in the relevant crew position in commercial air transport operations with the same operator; and

(ii) in the case of a pilot having experience with an operator and exercising the privileges of two licence endorsements and then being upgraded to pilot-in-command (PIC) with the same operator on one of those types, the required minimum experience as PIC is 6 months and 300 hours and the pilot shall have completed two consecutive operator pilot proficiency checks (OPCs) before again being eligible to exercise two licence endorsements;

(c) before commencing training for and operation of another type, flight crew members shall have completed 3 months and 150 hours flying on the base aeroplane, which shall include at least one proficiency check;

(d) after completion of the initial line check on the new type, 50 hours flying or 20 sectors shall be achieved solely on aeroplanes of the new type rating;

(e) recency shall be maintained for each type operated unless credits have been allowed by the Executive Director in accordance with subparagraph (g) below;

(f) the period within which line flying experience is required on each type shall be specified in the operations manual;

(g) where credits are sought to reduce the training, except as provided in sub-paragraph (h), checking and recent experience requirements between aeroplane types -

(i) for training, the operator shall demonstrate to the Executive Director which items need not be repeated on each type because of similarities. If credits are approved, the reduced recurrent training shall be specified in the operations manual;

(ii) for proficiency checks, credit may be given for operator proficiency checks to be alternated between the two types, in which case each proficiency check revalidates the proficiency check for the other type; and

(iii) for line checks, alternating the checks between types may be approved, in which case each line check revalidates the line check for the other type; and

(h) annual emergency and safety equipment training and checking shall cover all requirements for each type.

2. Area, route and aerodrome familiarisation

(1) An air service operator shall not assign, and a pilot shall not act, as PIC of an aeroplane conducting passenger-carrying operations unless the pilot is qualified for that area, route and aerodrome as provided in this TS.

(2) To meet the area, route and aerodrome familiarisation requirement, a PIC of an aeroplane conducting scheduled passenger-carrying operations shall -

(a) demonstrate to the operator an adequate knowledge of the route to be flown and the aerodromes which are to be used including -

(i) the terrain and minimum safe altitudes;

(ii) the seasonal meteorological conditions;

(iii) the meteorological, communication and air traffic facilities, services and procedures;

(iv) the search and rescue procedures;

(v) the aerodrome obstructions, physical layout, approach aids and arrival, departure, holding and instrument approach procedures and weather minima; and

(vi) the navigational facilities and procedures, including any long-range navigation procedures, associated with the route along which the flight is to take place;

(b) subject to subparagraph (d) below, have within the preceding 12 months, either operated over the area and route and into the aerodrome as a pilot or as an observer in a flight deck observer seat or have undergone training in -

(i) the route to be flown;

(ii) the aerodromes to be used;

(iii) the procedures applicable to flight paths over densely inhabited areas and areas of higher traffic density; and

(iv) obstructions, physical layout, lighting, approach aids and arrival, departure, holding and instrument approach procedures including operating minima;

(c) if a route requires a specific type of navigation qualification, have within the 12 months immediately preceding a flight on such route, demonstrated his or her ability to the operator by -

(i) flying over a route or area as PIC using the applicable special type of navigation system;

(ii) flying over a route or area under the supervision of a suitably qualified pilot using the applicable special type of navigation system; or

(iii) having acted as an observer in a flight deck observer seat, while flying over a route or area over which such PIC is to operate;

(d) a PIC need not have made an actual approach into each aerodrome of landing on the route if -

(i) the approach to an aerodrome is not over difficult terrain and the instrument approach procedures and aids available are similar to those which a pilot is familiar and the operator adds a margin to the normal operating minima, or there is reasonable certainty that the approach and landing can be made in visual meteorological conditions; or

(ii) an operator qualifies a PIC to land at the aerodrome concerned by means of an adequate pictorial presentation or the use of a flight simulation training device; or

(iii) an aerodrome concerned is located in the same geographical area as another aerodrome at which a PIC is currently qualified to land and there are no terrain or other major differences associated with that aerodrome that could pose a threat to safety: Provided that-

(aa) an operator submits the names of all aerodromes in a given geographical area that it wishes to be deemed as one aerodrome for the purposes of this TS to the Executive Director for approval; and

(bb) an operator lists all approved aerodromes in its operations manual; or

(iv) the decent from the initial approach altitude may be made by day in visual meteorological conditions; and

(e) a PIC whose area, route or aerodrome familiarisation lapses shall regain qualification by completing the requirements of subparagraphs (a), (b) or (c), as applicable.

(3) To meet the area, route and aerodrome familiarisation requirement, the PIC of an aeroplane conducting non-scheduled passenger-carrying operations shall demonstrate to the operator that he or she is knowledgeable about the area, route and aerodrome prior to operating there, including -

(a) the aerodrome operating minima, terrain and minimum safe altitudes;

(b) the seasonal meteorological conditions, in particular any localised adverse weather patterns;

(c) the meteorological, communication and air traffic facilities, services and procedures;

(d) the aerodrome obstructions, physical layout, approach aids and arrival, departure, holding and instrument approach procedures and weather minima; and

(e) the navigational facilities and procedures, including any long-range navigation procedures, associated with the route along which the flight is to take place.

121.02.16 FLIGHT TIME AND DUTY PERIODS SCHEME

Note - CAR 121.02.13 requires each air service operator to establish a scheme for the administration of flight time and duty periods. Operators are reminded that they bear sole responsibility for such schemes being in full compliance with any Acts, laws and regulations that are external to the Namibian Civil Aviation Regulations, notwithstanding any approvals given by the NCAA.

1. Definitions

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

(2) In addition, the definition of "duty period" is applicable to flight operations officers employed by an operator.

(3) Time spent on flight watch or home reserve may also be deemed to be part of a rest period as provided in section 8(2)(e) of this technical standard.

2. Maximum flight time

(1) The total flight time of the sectors on which an individual crew member is assigned as an operating crew member shall not exceed:

(a) 40 hours of flight time during the preceding seven days;

(b) 100 hours of flight time during the preceding 30 days; and

(c) 1000 hours during the preceding 365 days.

(2) If a crew member expects his or her cumulative flight hours projected for a particular operation, to exceed the appropriate limit the crew member shall inform the operator accordingly.

(3) Every crew member is required to inform the operator of all flying he or she has undertaken if the cumulative amount of such flying and any scheduled duties is likely to exceed the maximum times specified in the Regulations and its associated technical standards.

(4) Hours flown for leisure or recreation and outside the scope of an AOC shall not be subject to FDP limitations as prescribed in this Part.

(5) The onus rests with the crew member to ensure that they are adequately rested, manage their cumulative fatigue and remain within the prescribed maximum allowed flight times.

3. Operators' schemes and their approval

(1) An operator shall submit a proposed scheme for the regulation of flight time and duty periods and minimum rest periods to the Executive Director for approval with the aim of ensuring that crew members are performing at an adequate level of alertness.

(2) Any less restrictive deviation from the approved scheme shall be submitted to the Executive Director for approval and this submission shall be based on relevant scientific data to support the proposed scheme.

(3) An air service operator who establishes a scheme for the regulation of flight time and duty periods in accordance with NAMCAR 121.02.13 (1) (a) (ii) shall establish and submit to the Executive Director for approval, a fatigue risk management system for the purpose of managing fatigue, in accordance with NAMCAR 121.02.14.

(4) Post-flight duty shall count as duty period. The operator shall specify post-flight duty times in their Operations Manual, taking into account the type of operation, the size and type of aircraft and the airport conditions.

4. General principles of control of flight, duty and rest time

(1) The prime objective of any scheme of flight time and duty limitations is to ensure that flight crew members are adequately rested at the beginning of each flight duty period (FDP). Aeroplane operators will therefore need to take account of inter-related planning constraints on -

(a) individual duty and rest periods;

(b) the length of cycles of duty and the associated periods of rest; and

(c) cumulative duty hours within specific periods.

(2) Duties shall be scheduled within the limits of the operator's scheme. To allow for unforeseeable delays the pilot-in-command (PIC) may, within prescribed conditions, use his or her discretion to exceed the limits on the day. Nevertheless, flight schedules shall be realistic, and the planning of duties shall be designed to avoid as far as possible exceeding the flight time and duty limits.

(3) 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 flight 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 flight crews, other than those on standby duty; and

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

5. Responsibilities of crew members

It is the responsibility of all flight 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.

6. Standard provisions required for an operator's scheme

(1) The standard provisions which the Executive Director regards as the basis for an acceptable scheme of flight time and duty limitations and which, if included in an operator's scheme, will facilitate approval by the Executive Director are contained in sections 7 to 13 below.

(2) Although operators are expected to plan their schemes in accordance with the requirements, it is however, recognised that the standard provisions will not necessarily be completely adaptable to every kind of operation. In exceptional circumstances therefore, operators may apply to have variations from the standard provisions included in their schemes. However, such variations should be kept to a minimum and approval will only be granted where an operator can show that these proposed provisions will ensure an equivalent level of protection against fatigue.

7. Limitations of single flight duty periods - flight deck crew

Note - *Tables 1-4 referred to in this section may be found at the end of this technical standard.*

7.1. Maximum rostered flight duty periods

The maximum rostered FDP (in hours) shall be in accordance with Table 1 or 2, or Table 3 or 4. Rostering limits in the tables may be extended by in-flight relief or split duty under the terms of sections 7.2 and 7.3. On the day, the PIC may at his or her discretion further extend the FDP actually worked in accordance with section 7.6.

(1) Maximum FDP - Two pilot crews: Aeroplanes

Table 1 applies when the FDP starts at a place where the flight crew member is acclimatised to local time, and Table 2 applies to other times. To be considered acclimatised for the purpose of this technical standard, a flight crew member shall be allowed three consecutive local nights free of duty within a local time zone band which is two hours wide. He or she will thereafter be considered to remain acclimatised to that same time zone band until he or she ends a duty period at a place where local time falls outside this time zone band.

(2) Maximum FDP - Two pilots plus additional flight crew member: Aeroplanes

Table 3 applies when the FDP starts at a place where the flight crew member is acclimatised to local time, and Table 4 applies at other times. To be considered acclimatised for the purposes of this technical standard, a flight crew member shall be allowed three consecutive local nights free of duty within a local time zone band which is two hours wide. He or she will thereafter be considered to remain acclimatised to that same time zone band until he or she ends a duty period at a place where local time falls outside this time zone band.

(3) Limits on two flight crew long range operations

(This paragraph does not apply to cabin crew members)

When an aeroplane flight deck crew comprises only two pilots, the allowable FDP is calculated as follows: A sector scheduled for more than 7 hours is considered as a multi-sector flight, as below:

Scheduled sector times	Acclimatised to local time	Not acclimated to local time
	Sectors	Sectors
Sector length over 7 hrs but not more than 9 hrs	2	4
Sector length over 9 hrs but not more than 11 hrs	3	4
Sector length over 11 hrs	4	Not applicable

7.2. Extension of flight duty period by in-flight relief

(1) When any additional flight crew member is carried to provide in-flight relief for the purpose of extending a FDP, he or she shall hold qualifications which will meet the requirements of the operational duty for which he or she is required as a relief.

(2) When in-flight relief is provided, there shall be available, for the flight crew member who is resting, a comfortable reclining seat or bunk separated and screened from the flight deck and passengers.

(3) A total of in-flight rest of less than three hours will not count towards extension of an FDP, but where the total of in-flight rest (which need not be consecutive) is three hours or more, the rostered FDP may be extended beyond that permitted in Tables 1 and 2 or 3 and 4 by -

(a) if rest is taken in a bunk, a period equal to one-half of the total of rest taken, provided that the maximum FDP permissible is 18 hours (or 19 hours in the case of cabin crew members); and

(b) if rest is taken in a seat, a period equal to one-third of the total of rest taken, provided that the maximum FDP permissible is 15 hours (or 16 hours in the case of cabin crew members).

(4) The maximum extension allowable is equivalent to that applying to the basic flight crew member with the least rest.

(5) Where a flight crew member undertakes a period of in-flight relief and after its completion is wholly free of duty for the remainder of the flight, that part of the flight following completion of duty may be classed as positioning and be subject to the controls on positioning detailed in section 7.4.

7.3. Extension of flight duty period by split duty

When a FDP consists of two or more flight duties separated by less than a minimum rest period, then the FDP may be extended beyond that permitted in the tables by the amounts indicated below -

Consecutive hour rest	Maximum extension of the FDP
Less than 3	Nil
3-10	Period equal to half of the consecutive hours rest taken

The rest period shall not include the time required for immediate post-flight and pre-flight duties. When the rest period is not more than six hours it will be sufficient if a quiet and comfortable place is available, not open to the public, but if the rest period is more than six consecutive hours, then a bed shall be provided.

7.4. Positioning

All time spent on positioning as required by the operator is classed as duty, but positioning as a passenger does not count as a sector when assessing the maximum permissible FDP. Positioning, as required by the operator, which immediately precedes a FDP, is included as part of the FDP for the purpose of section 7.1.

7.5. Travelling time

(1) Travelling time other than that time spent on positioning may not be classed as duty time and may not be included in cumulative totals of duty hours.

Note - *Travelling time from home to departure aerodrome can become an important factor if long distances are involved. If the journey time from home to the normal departure aerodrome is lengthy, flight crew members should make arrangements for accommodation nearer to their bases to ensure adequate pre-flight rest.*

(2) Where travelling time between the aerodrome and sleeping accommodation provided by the operator exceeds thirty minutes each way, the rest period shall be increased by the amount of the excess, or such lesser time as is consistent with a minimum of ten hours at the sleeping accommodation.

(3) When flight crew members are required to travel from their home to an aerodrome other than the one from which they normally operate, the assumed travelling time from the normal aerodrome to the other aerodrome is classed as positioning and is subject to the controls of positioning detailed in section 7.4.

7.6. Pilot-in-command's discretion to extend a flight duty period

(1) A PIC may, at his or her discretion, extend a FDP beyond the maximum normally permitted, provided he or she is satisfied that the flight can safely be made. In these circumstances the maximum normally permitted is calculated according to what actually happens, not on what was planned to happen. The operator's scheme shall

include guidance to PICs on the limits within which discretion to extend a FDP may be exercised. An extension of three hours beyond the maximum normally permitted should be regarded as the maximum, except in cases of emergency.

Note - *It is important to note that the PIC discretion shall take into consideration whether or not a ". . . crew member is suffering from or, having regard to the circumstances of the flight to be undertaken, is likely to suffer from fatigue which may endanger the safety of the aeroplane or its crew members and passengers . . ." as provided in CAR 121.02.13(2)(b).*

(2) Whenever a PIC so exercises his or her discretion, he or she shall report it to the operator and, should the maximum normally permitted be exceeded by more than two hours, both the PIC and the operator shall submit a written PIC's discretion report - extension of flying duty period, to the Executive Director within thirty days.

Notes -

1. *Discretion reports either concerning extension of a FDP in excess of two hours or reduction of a rest period shall be submitted in the PIC's Discretion Report form, which is available from the NCAA. Those reports will be used by the Executive Director when assessing the realism of particular schedules.*

2. *An emergency in respect of an extension of a FDP is a situation which in the judgment of the PIC presents serious risk to health or safety.*

7.7. Delayed reporting time

When flight crew members are informed of a delay before leaving their place of rest the FDP starts at the new reporting time or four hours after the original reporting time, whichever is the earlier. The maximum FDP is based on the original reporting time. This subsection does not apply if flight crew members are given ten hours or more notice of a new reporting time.

8. Rest periods

(1) It is the responsibility of an operator to notify flight crew members of an FDP and not to schedule such flight crew members for duty other than flight watch or standby at home, so that adequate and, within reason, uninterrupted pre-flight rest can be obtained by a flight crew before the commencement of the next FDP.

(2) Away from home base, an operator shall provide the opportunity and facilities for the flight crew to obtain adequate pre-flight rest.

(3) It is an operator's responsibility to ensure that rest accommodation provided to the flight crew members is satisfactory.

(4) When operations are carried out at such short notice that it is impracticable for an operator to ensure that rest accommodation is satisfactory, it shall be a PIC's responsibility to obtain satisfactory accommodation.

(5) The following rest period requirements shall be applied -

(a) the minimum rest period provided before undertaking an FDP -

(i) starting at home base shall be a minimum of 12 hours; and

(ii) starting away from home base, when acclimatised to local time, shall be a minimum of 10 hours at the place of rest. This period shall include a local night provided that an operator provides suitable accommodation to the crew member away from home base;

(iii) if the rest period referred to in subparagraph (ii):

(aa) does not include a local night, then the rest period shall be a minimum of 12 hours at the place of rest; and

(bb) is outside a local night, then the rest period shall be a minimum of 14 hours at the place of rest.

(b) Following from paragraph (a), an approved FRMS scheme may reduce the minimum rest periods in accordance with an OpsSpec applicable to the type of operation and shall consider the following elements:

(i) the minimum reduced rest period;

(ii) the increase of the subsequent rest period; and

(iii) the reduction of the FDP following the reduced rest.

(c) following 50 hours of cumulative flight duty in any rolling seven-day period associated with his or her employment, except flight watch and home reserve duty, a flight crew member shall have a rest period of not less than 24 consecutive hours before commencing further duties;

(d) when a flight crew member has completed a flight time and duty period in excess of eighteen hours, he or she shall receive a rest period of at least eighteen hours including a local night before he or she commences any further duties; and

(e) time spent on flight watch and home reserve duty prior to a FDP shall not be counted when determining the limitations associated with the FDP.

(6) Disruptive schedules

(i) if the transition from a late finish or night duty to an early start is planned at home base, the rest period between the two consecutive FDP shall include at least one local night;

(ii) recurrent extended recovery rest periods:

An approved operator's scheme shall specify recurrent extended recovery rest periods to compensate for cumulative fatigue. The minimum recurrent extended recovery rest period shall be 36 hours, including two local nights, and in all cases the time between the end of one recurrent extended recovery rest period and the start of the next extended recovery rest period shall not be more than 168 hours. The recurrent extended recovery rest period shall be increased to two local nights twice every 30 days; and

(iii) If a crew member performs four night duties, early starts or late finishes between two extended recovery rest periods as referred to in paragraph (c) (ii), the second extended recovery rest period shall be extended to 60 hours.

(6) Pilot-in-command's discretion to reduce a rest period

A PIC may, at his or her discretion, reduce a rest period to below the minimum required by sections 8(2) and 12(2)(b). The exercise of such discretion shall be considered exceptional and should not be used to reduce successive rest periods. A rest period shall be long enough to allow flight crew members at least eight hours rest, at the accommodation where the rest is taken. If a rest period is reduced, the PIC shall submit a report to his or her employer, and if the reduction exceeds two hours, a written report shall be submitted to the Executive Director within thirty days.

(7) For the purpose of calculating the minimum rest period before commencement of flight duty, the required post-flight duties on completion of the previous FDP is added to such FDP.

9. Duty periods

(1) The following limits apply -

Duty	Maximum duration
Flight watch	No limit*
Home reserve	No limit*
Positioning	No maximum**
Standby	Maximum 12 hours (not necessarily consecutive) in any 24 hour period
Standby + FDP	+20 hours

* However, the provisions of paragraph (2) apply.

** However, the provisions of section 7.4 apply

(2) For the purpose of calculating duty time, the following applies -

(a) for the calculation of accumulated duty time in terms of section 11, flight watch and home reserve is credited on the basis of eight hours for every period of twenty-four or fewer consecutive hours, or on a one-for-one basis, whichever is the lesser;

(b) standby duty time shall count fully as duty time for the calculation of accumulated duty time in terms of sections 8(2)(c) and (d) and 11; and

(c) see section 7.4 in respect of positioning time.

10. Days off

Flight crew members shall -

(a) not work more than seven consecutive days between days off;

(b) have two consecutive days off in any consecutive fourteen days;

(c) have a minimum of six days off in any consecutive four weeks at the aerodrome from which they normally operate; and

(d) have an average of at least eight days off in each consecutive four week period, averaged over three such periods.

11. Cumulative duty and flying hours

Maximum cumulative duty hours: The average weekly total of duty hours may not exceed sixty hours over seven days, or fifty hours averaged over any four consecutive weeks. All types of duty, flight duty, ground duty, split duty, stand-by and positioning is counted in full for this purpose. Any period of seven or more consecutive days within which the flight crew member is employed on duty other than flight duty, flight watch or home reserve, standby or positioning is not included in calculating the above average weekly total of duty hours.

12. Cabin crew members

(1) The requirements detailed in this section are applicable to all cabin crew members carried as cabin crew members.

(2) The limitations which apply to cabin crew members are those contained in sections 7 to 11 applicable to flight deck crew members, but with the following adjustment -

(a) rostered FDPs may not be more than one hour longer than those permitted to flight deck crew members and contained in section 7.1. In order to remove anomalies which might arise when cabin crew members and flight deck crew members report at different times for the same flight, the maximum FDP for cabin crew members shall be based on the time at which the flight deck crew start their FDP;

(b) rostered minimum rest periods must not be more than one hour shorter than those required by flight deck crew as contained in section 8(2);

(c) for the purpose of a FDP extension following in-flight rest by cabin crew members -

(i) a period of a minimum of two consecutive hours of rest shall allow for the extension of such FDP by half the actual rest period; and

(ii) where in-flight rest is provided for more than three hours, the provisions of section 8(2)(a)(iii) apply;

(d) the combined sum of standby duty and following FDP may not exceed 21 hours;

(e) the average weekly total of duty hours may not exceed fifty-five hours; and

(f) the annual and monthly limits on flying hours need not be applied.

13. Flight operations officer or flight follower maximum duty and rest periods

(1) An operator's flight time and duty period scheme shall also include the requirements detailed in this section applicable to all flight operations officers and flight followers.

(2) The maximum duty period to which a flight operations officer or flight follower may be assigned are -

(a) where the entire duty period falls between the hours of 06h00 and 23h59 local time a flight operations officer or a flight follower may be assigned to a maximum duty period of 10 consecutive hours; and

(b) where any part of the duty period falls between the hours of 00h00 and 05h59 a flight operations officer or flight follower may be assigned to a maximum duty period of eight consecutive hours.

(3) Upon completion of any duty period, a flight operations officer or flight follower shall receive a rest period of not less than 10 consecutive hours.

(4) Where necessitated by unforeseen operational circumstances, any duty period prescribed in paragraph (2) above may be extended by a maximum of two hours provided -

(a) the flight operations officer or flight follower has had a rest period of not less than 12 consecutive hours immediately preceding the duty period; and

(b) the maximum cumulative duty hours in any 6 day period does not exceed, in the case of a duty period prescribed in paragraph (2)(a), 66 duty hours; and in the case of a duty period prescribed in paragraph (2)(b), 54 duty hours.

(5) A duty period shall include the time taken to perform all hand-off procedures as laid down in the operator's operations manual.

(6) Each the flight operations officer or flight follower shall receive not less than one day off in every seven day period exclusive of any earned holidays or allowed sick leave.

14. Records to be maintained

(1) An operator shall retain flight crew member flight time and duty period records as provided in
CAR 121.04.6.

(2) An operator shall retain all PIC discretion reports of extended FDPs and reduced rest periods for a period of at least six months.

TABLES to TS 121.02.13

Table 1 - Maximum flight duty period: Two pilot crews - aeroplanes: acclimatised to local time

Local time of start	Sectors							
	1	2	3	4	5	6	7	8 or more
0500 – 0659	13	12 ¼	11 ½	10 ¾	10	9 ¼	9	9
0700 – 1359	14	13 ¼	12 ½	11 ¾	11	10 ¼	9 ½	9
1400 – 2059	13	12 ¼	11 ½	10 ¾	10	9 ¼	9	9
2100 – 2159	12	11 ¼	10 ½	9 ¾	9	9	9	9
2200 – 0459	11	10 ¼	9 ½	9	9	9	9	9

Table 2 - Maximum flight duty period: Two pilot crews - aeroplanes: 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	12 ¼	11 ½	10 ¾	10	9 ¼	9
Between 18 and 30	12	11 ¼	10 ½	9 ¾	9	9	9

Table 3 - Maximum flight duty period: Basic crew consisting of three flight crew members - aeroplanes certified for three crew members: acclimatised to local time

Local time of start	Sectors							
	1	2	3	4	5	6	7	8 or more
0500 – 0659	13	12 ¼	11 ½	10 ¾	10	9 ¼	9	9
0700 – 1359	14	13 ¼	12 ½	11 ¾	11	10 ¼	9 ½	9
1400 – 2059	13	12 ¼	11 ½	10 ¾	10	9 ¼	9	9
2100 – 2159	12	11 ¼	10 ½	9 ¾	9	9	9	9
2200 – 0459	11	10 ¼	9 ½	9	9	9	9	9

Table 4 - Maximum flight duty period: Basic crew consisting of three flight crew members - aeroplanes certified for three flight crew members: 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	12 ¼	11 ½	10 ¾	10	9 ¼	9
Between 18 and 30	12	11 ¼	10 ½	9 ¾	9	9	9

Note – *The reason that available duty times are less following rest periods inside 18 – 30 hours is the aeromedical advice that the quality of rest is less due to the disturbance of the body's natural rhythm.*

121.02.17 FATIGUE RISK MANAGEMENT SYSTEM

1. Fatigue risk management policy

(1) An air service operator's FRMS policy shall -

(a) clearly identify all elements of the FRMS;

(b) define the scope of the operations in the operations manual;

(c) reflect the shared responsibility of management, flight crew, cabin crew and other involved personnel;

(d) identify clear lines of accountability for management, flight crew and cabin crew and other involved personnel;

(e) clearly state the safety objectives of the FRMS;

(f) be signed by the accountable executive of the operator;

(g) be communicated, with visible endorsement, to all the relevant areas and levels of the operator;

(h) declare management commitment to effective safety reporting;

(i) declare management commitment to the provision of adequate resources for the FRMS;

(j) declare management commitment to continuous improvement of the FRMS; and

(k) document periodic reviews to ensure it remains relevant and appropriate.

Note - *Effective safety reporting is described in the FRMS Guidance Material*.

(2) FRMS manual

(a) An air service operator shall develop and keep a current FRMS manual that defines and records the following:

(i) FRMS policy and objectives;

(ii) FRMS processes and procedures;

(iii) accountabilities, responsibilities and authorities for these processes and procedures;

(iv) mechanisms for on-going involvement of management, flight crew and cabin crew members and all other involved personnel;

(v) FRMS training programmes, training requirements and attendance records;

(vi) scheduled and actual flight times, duty periods and rest periods with significant deviations and reasons for such deviations; and

(vii) FRMS outputs including findings from collected data, recommendations, and actions taken.

Note - *This manual may be incorporated into the SMS manual of the system of operations manuals.*

2. Fatigue risk management processes

2.1. Identification of hazards

(1) When identifying hazards, an air service operator shall develop and maintain the following three fundamental and documented processes for fatigue hazard identification:

(a) the predictive process which shall identify fatigue hazards by examining crew scheduling and taking into account factors known to affect sleep and fatigue and their effects on performance. Methods of examination may include but are not limited to:

(i) Operator or industry operational experience and data collected on similar types of operations;

(ii) Evidence-based scheduling practices; and

(iii) Bio-mathematical models;

(b) the proactive process which shall identify fatigue hazards within current flight operations. Methods of examination may include but are not limited to:

(i) Self-reporting of fatigue risks;

(ii) crew fatigue surveys;

(iii) relevant flight and cabin crew performance data;

(iv) available safety databases and scientific studies; and

(v) analysis of planned versus actual time worked;

(c) the reactive process which shall identify the contribution of fatigue hazards to reports and events associated with potential negative safety consequences in order to determine how the impact of fatigue could have been minimised. At a minimum, the process may be triggered by any of the following:

(i) fatigue reports;

(ii) confidential reports;

(iii) audit reports;

(iv) incidents; and

(v) flight data analysis events.

(2) Risk assessment

(a) An air service operator shall develop and implement risk assessment procedures that determine the probability and potential severity of fatigue-related events and identify when the associated risks require mitigation. The risk assessments procedures shall review identified hazards and link them to the following:

(i) operational processes;

(ii) their probability;

(iii) possible consequences; and

(iv) the effectiveness of existing safety barriers and controls.

(b) An air service operator shall develop and implement risk mitigation procedures that -

(i) select the appropriate mitigation strategies;

(ii) implement the mitigation strategies; and

(iii) monitor the strategies implementation and effectiveness.

3. FRMS safety assurance processes

(1) An air service operator shall develop and maintain FRMS safety assurance process to attain the following-

(a) provide for continuous FRMS performance monitoring, analysis of trend, and measurement to validate the effectiveness of the fatigue safety risk controls. The sources of data may include, but are not limited to the following:

(i) hazard reporting and investigations;

(ii) audits and surveys; and

(iii) reviews and fatigue studies;

(b) provide a formal process for the management of change which shall include but not limited to the following:

(i) identification of changes in the operational environment that may affect FRMS; and

(ii) identification of changes within the organisation that may affect FRMS;

(iii) consideration of available tools which could be used to maintain or improve FRMS performance prior to implementing changes.

(c) provide for the continuous improvement of the FRMS. This shall include but is not limited to the following:

(i) the elimination and/or modification of risk controls have had unintended consequences or that are no longer needed due to changes in the operational or organisational environment;

(ii) routine evaluations of facilities, equipment, documentation and procedures; and

(iii) the determination of the need to introduce new processes and procedures to mitigate emerging fatigue-related risks.

4. FRMS promotion processes

(1) An air service operator shall support the on-going development of the FRMS, the continuous improvement of its overall performance, and attainment of optimum safety levels. The following shall be established and implemented by the air service operator as part of its FRMS:

(a) training programmes to ensure competency commensurate with the roles and responsibilities of management, flight and cabin crew, and all other relevant personnel under the planned FRMS; and

(b) an effective FRMS communications plan that ensures the following -

(i) FRMS policies, procedures and responsibilities are explained to all relevant stakeholders; and

(ii) communication channels used to gather and disseminate FRMS related information are described.

121.2.19 FATIGUE RISK MANAGEMENT SYSTEM MANUAL

The FRMS shall reside within a SMS manual.

121.03.1 OPERATOR APPROVED TRAINING AND CHECKING PROGRAMME

Note - *While this technical standard establishes the means of compliance with Subpart 3 of the Namibian Civil Aviation Regulations, existing training programmes approved by the Executive Director shall maintain an approved status and do not require restructuring in order to meet this TS. The intent of this TS is concerned with content not necessarily structure or layout. If during the auditing or oversight process an existing programme is found to be deficient, the NCAA inspector or DFE will record the deficiencies and given a reasonable period of time, the operator will be required to produce the appropriate revision. Notwithstanding the foregoing all new or revised training programme submissions must comply with this TS in content and where noted, structure.*

1. Equipment, facilities and personnel of a training programme

An operator shall ensure that its training equipment and facilities and personnel are adequate for their intended purpose.

(a) Equipment - While no specific standards are published for the training equipment used as teaching aids, a benchmark that will be applied is whether or not the information being

presented is represented by adequate training aids so as to make the material understandable to the trainee. Equipment will be measured against the state of the art with reasonable consideration given to the scope and size of the operator.

(b) Facilities - Training facilities like equipment do not have any hard benchmarks but again are assessed for their suitability by a comparison to the state of the art training facilities giving due consideration for the scope and size of the operator. Facilities normally must be such that the trainee will not be distracted from the course material or training aids being displayed and provides an environment conducive to learning. Such benchmarks as control over lighting, noise, temperature control, location, orientation and general comfort of learning stations, and where needed sound enhancement or amplification must be favourable to a learning environment.

(c) Personnel - Qualifications of training and checking personnel listed herein shall be documented by the operator and approved in the manner prescribed herein.

2. Use of FFS for training and checking

(1) It is anticipated that in the delivery of its flight training programme, an operator will make every reasonable effort to use the most updated FSTDs where such FSTD is available to the operator.

(2) In the case of flight training for which there is in service a suitable FFS, the aeroplane-specific training shall be completed in a FFS approved for that purpose.

(3) Reference to a FFS in this regulation means a FFS of a level required to accomplish the training programme approved for the operator.

(4) Where an operator has been approved for LVO, all training and checking with respect to LVO shall be performed in a FFS approved for that purpose.

3. Qualifications of training and checking personnel

(1) General qualifications

Notes -

1. Unless otherwise specified, reference to an aeroplane type shall be taken to mean type or variant of that type of aeroplane, where applicable.

2. Other than regaining qualification training as noted, reference to training and/or checking shall be taken to mean initial, upgrade, recurrent or differences training.

(a) An operator shall not assign any person to provide and no person shall provide any flight crew member training required in terms of Division Two of Subpart 3, unless such person has completed the operator's instructor training programme that shall include -

(i) for instructor pilots (aircraft) -

(aa) the safety measures for emergency situations that are likely to develop during instruction;

(bb) the potential results of improper, untimely or non-execution of safety measures during instruction;

(cc) inflight training and practise in conducting flight instruction from the left and right pilot seats using the required normal, abnormal and emergency procedures to ensure competence as an instructor; and

(dd) the safety measures to be taken from either pilot seat for emergency situations that are likely to develop during instruction; and

(ii) for flight instructors (FSTD) -

(aa) training and practise in the required normal, abnormal and emergency procedures to ensure competence to conduct the flight instruction required by this Subpart. This training and practise shall be accomplished in full or in part in a FFS; and

(bb) training in the operation of FFSs or FSTDs, as applicable to the training programme, to ensure competence to conduct the flight instruction required by this TS.

(b) An operator shall not assign any person to provide and no person shall provide any flight crew member required training unless such person is the holder of a flight instructor rating or has satisfactorily demonstrated to the operator knowledge of -

(i) the fundamental principles of the teaching/learning process;

(ii) teaching methods and procedures;

(iii) the instructor/student relationship;

(iv) proper evaluation of student performance including the detection of student performance of -

(aa) improper and insufficient training; and

(bb) personal characteristics of an applicant that could adversely affect safety;

(v) learning impediments;

(vi) human factors relating to the effects of stress and hazardous attitudes;

(vii) the objectives and standards of the operator's training programme;

(viii) the effective use of training devices used in the programme;

(ix) safety in the training environment; and

(x) the CAR and CATS relating to training requirements.

(c) All training personnel shall have demonstrated to the satisfaction of the operator, a proficient level of practical and theoretical knowledge of -

(i) the subject the instructor is to teach;

(ii) the aeroplane type the instructor is to teach on;

(iii) the basic principles of learning and techniques of instruction;

(iv) preparation and use of lesson plans;

(v) the administrative procedures with respect to the established trainee progress forms;

(vi) briefing and debriefing techniques relative to the exercises;

(vii) all associated training devices, including applicable FSTDs to be used;

(viii) the procedures established in the training programme for the administration, review and correction of required examinations or other approved methods of establishing comprehension;

(ix) the appropriate corrective action and subsequent administrative procedures in the case of unsatisfactory performance during training; and

(x) the system of record keeping approved to be used in conjunction with the training programme.

(2) Qualifications of a ground instructor

Each ground instructor shall meet the requirements of section 3(1) of this TS and -

(a) if conducting aeroplane type training, the ground instructor shall have successfully completed the initial and recurrent technical training and testing as applicable for each type of aeroplane;

(b) if conducting training relating to special operations or non-aeroplane specific courses shall have completed the associated training and testing and be certified by the training manager or equivalent company officer, as competent to teach such subject(s);

(c) have a sound knowledge of the Aircraft Flight Manual, Aircraft Operating Manual, manuals for special equipment training and the Company Operations and Training Manuals; and

(d) where the type of training includes interfacing with other crew members, an appropriate level of knowledge of the functional manuals assigned to such other crew members.

(3) Qualifications of flight training pilot (aeroplane)

Each flight training pilot shall have met the requirements of section 3(1) of this TS and -

(a) hold a valid airline transport pilot licence (ATPL), instrument rating, medical certificate and a type rating for the type of aeroplane on which training will be given and, for any training requiring licensing action such as an initial type rating or instrument rating, a valid flight instructor rating with appropriate endorsements as specified in Part 61;

(b) be qualified for line flying on the type of aeroplane;

(c) be qualified to perform PF and PNF duties while occupying either flight crew member seat;

(d) know the content of the Aircraft Operating Manual, Special Equipment Manuals, as appropriate, Company Operations and Training Manuals and the operator's Aircraft Flight Manual/ Standard Operating Procedures for the aeroplane type;

(e) know the relevant provisions of Namibia and where international operations are involved, the foreign regulations; and

(f) within the preceding 24 calendar months, have satisfactorily conducted instruction under the observation of an inspector, authorised officer or DFE.

(4) Qualifications of flight training pilot (FSTD)

Each FSTD training pilot shall -

(a) hold or have held an ATPL and an instrument rating appropriate for the class of aeroplane and, for any training requiring licensing action such as an initial type rating or instrument rating, a valid flight instructor rating with appropriate endorsements as specified in Part 61;

(b) have completed the operator's ground school and synthetic training device programme for the type of aeroplane;

(c) have successfully completed within the past 12 months a pilot proficiency check in the synthetic training device or aeroplane for that type;

(d) know the content of the Aircraft Flight Manual, Aircraft Operating Manual, Special Equipment Manuals as appropriate, Company Operations, Training Manuals and the operator's Standard Operating Procedures for the aeroplane type;

(e) know the relevant provisions of Namibia and where international operations are involved, the foreign regulations; and

(f) have received instruction on and demonstrated ability with respect to the operation of the synthetic training device from an instructor qualified to operate the FSTD.

(5) Qualifications of a LOFT facilitator

Each LOFT facilitator shall -

(a) have completed a CRM course in the preceding three years;

(b) have at least two years of line flying with the operator and on the specific aeroplane type;

(c) have previous experience in training of operator crews;

(d) hold or have held a valid Airline Transport Pilot Licence with the appropriate aeroplane endorsement or at least the equivalent experience that could lead to the issue of this licence;

(e) have completed the initial/recurrent training approved in the company operations manual;

(f) know the content of the Aircraft Flight Manual, Special Equipment Manuals, as appropriate, Company Operations and Training Manuals and the operator's Aircraft Operating Manual/ Standard Operating Procedures for the aeroplane type;

(g) maintain line familiarity as a flight crew member or observer, of at least six flight sectors within the preceding twelve months on the aeroplane on which the instruction will be given; and

(h) demonstrate yearly, on a check, a satisfactory level of proficiency and knowledge of the operator's operations.

(6) Qualifications of Flight Engineer instructor (FSTD)

Each flight engineer instructor shall -

(a) have completed the operator's ground school and synthetic flight training device programme for the type of aeroplane;

(b) have successfully completed within the past 12 months a flight engineer check in a synthetic flight training device for that type;

(c) know the content of the Aircraft Flight Manual, Aircraft Operating Manual, Special Equipment Manuals as appropriate, Company Operations, Training Manuals and the operator's Standard Operating Procedures for the aeroplane type; and

(d) have received instruction on the operation of the FSTD from an instructor qualified to operate the FSTD.

(7) Qualifications of pilot checking personnel

A person authorised to conduct pilot skills tests shall -

(a) in the case of a OPC conducted in an aeroplane -

(i) have met all the qualification requirements specified in section 3(1) and (3) of this TS;

(ii) for OPCs involving an initial issue or revalidation of an instrument rating or an initial issue of a multi-engine piston class rating or turbine rating, be the

holder of a DFE authority issued by the Executive Director appropriate to the aeroplane in which such OPC is to be conducted and for all other OPCs, be a current Grade I or Grade II flight instructor qualified on that aeroplane;

(iii) have been monitored in the preceding 12 months conducting a OPC, in the same aeroplane type for which the authority is being sought -

(A) for DFEs, by a NCAA inspector or, in exceptional circumstances, another DFE approved by the Executive Director; and

(B) for flight instructors, by a DFE;

(iv) hold a valid medical certificate;

(v) have completed the operator's training programme and be qualified as a line captain; and

(vi) be qualified to perform PF and PNF duties while occupying either flight crew member seat;

(b) in the case of a OPC conducted in a FSTD -

(i) have met all the qualification requirements specified in section 3(1) and (3) of this TS;

(ii) for OPCs involving an initial issue or revalidation of an instrument rating or an initial issue of a multi-engine piston class rating or turbine rating, be the holder of a DFE authority issued by the Executive Director appropriate to the aeroplane in which such OPC is to be conducted and for all other OPCs, be a current Grade I or Grade II flight instructor qualified on that aeroplane;

(iii) have been monitored in the preceding 12 months conducting an OPC, in the same aeroplane type for which the authority is being sought -

(aa) for DFEs, by a NCAA inspector or, in exceptional circumstances, another DFE approved by the Executive Director; and

(bb) for flight instructors, by a DFE;

(iv) have completed the operator's training programme, hold a current OPC and have participated in or observed at least six flight sectors of line operations from a pilot or observer seat in the preceding 12 months;

(c) in the case of line checks performed by company check pilots (CCPs) -

(i) hold a valid ATPL;

(ii) hold a valid medical certificate;

(iii) have adequately demonstrated competency in terms of TS 121.03.3(6);

(iv) have completed the operator's training programme, be current and qualified as a line captain on the aircraft type on which the line check will be given;

(v) be qualified to perform PF and PNF duties while occupying a flight crew member seat;

(vi) be certified in his or her training file as authorised by an operator to conduct line checks as specified in such certification;

(vii) hold a valid Instrument Rating;

(viii) have knowledge of the Standard Operating Procedures, AFM, MEL and special equipment manuals, operations and training manuals applicable to the operation; and

(ix) have practical and theoretical knowledge of the administrative procedures and records management system applicable to the operator and approved in conjunction with the training program.

(d) in the case of a check flight engineer -

(i) have met all the qualification requirements specified in section 3(1) and (6) of this TS;

(ii) be the holder of a flight engineer DFE authority issued by the Executive Director appropriate to the type of aeroplane used for the FE check; and

(iii) have been monitored in the preceding 12 months conducting an FE proficiency check on a flight engineer, in the same aeroplane type as the authority being sought, by a NCAA inspector or, in exceptional circumstances, another DFE appointed by the Executive Director.

(8) Qualifications of cabin crew instructors and persons authorised to conduct checks

An operator shall not assign any person to provide and no person shall provide any cabin crew member training or checking, as required in terms of Division Three or Five of this Subpart, unless such person -

(a) is the holder of a valid cabin crew member licence issued in terms of Part 64 and Class II medical certificate;

(b) has completed an approved train the trainer course;

(c) has undergone an approved assessor course;

(d) has a minimum of 2 years and at least 1 000 flying hours experience as an active cabin crew member; and

(e) is fully qualified and current on the aeroplane type.

(9) Qualifications of Flight Operations Officer (FOO) instructors and examiners

(a) an operator shall not assign any person to provide and no person shall provide any generic or operator-specific FOO training required in terms of Division Four of Subpart 3, unless such person-

(i) is the holder of a valid FOO certificate of competency issued in terms of Division Five of Subpart 3;

(ii) has completed the FOO generic course of studies;

(iii) has completed the operator-specific FOO training for each type of operational control system and each aeroplane type he or she will be required to perform training on; and

(iv) has successfully completed a proficiency check as specified in Division Five of Subpart 3 in the preceding 12 months.

(b) An operator shall not assign and no person shall act as a FOO examiner unless such person -

(i) is the holder of a current FOO certificate of competency appropriate to their assigned duties;

(ii) has completed the FOO training referred to in sub-paragraph (a) appropriate to their assigned duties,

(iii) has successfully completed a proficiency check as specified in Division Five of Subpart 3; and

(iv) has been certified by the operator to act as a FOO examiner for those types of operational control systems and aeroplanes listed in the certification.

(10) Training for other than crew members and FOO

Training for ground personnel whose function is essential to safety of flight operations shall be conducted by a competent person assigned by the manager responsible for the department to which such ground personnel are assigned. Specific qualifications for such instructors shall be published in the operators' operations manual.

121.03.2 APPROVAL OF TRAINING PROGRAMME

1. Approval process of an operator training programme

(1) Each air service operator shall submit two complete copies of its proposed training programme along with a list of effective pages to the Executive Director for review and approval.

(2) Where in the opinion of the Executive Director the proposed programme has been presented in sufficient detail to enable him/her to make a preliminary evaluation and

determine the programme meets the requirements of these technical standards, an initial approval of the training programme will be given. One copy of the programme will be returned along with a copy of the list of effective pages which will bear an initial approval stamp. An operator is then authorised to present the programme.

(3) Where insufficient detail has been provided the Executive Director may return the syllabus either in whole or in part for further development.

(4) The initial approval referred to in paragraph (2) will normally be given for an initial period of one year during which time the programme will be monitored in sufficient depth to enable a final decision to be made with respect to the effectiveness of the programme in terms of meeting the established training goals.

(5) When the Executive Director is satisfied that the training programme meets the requirements of this technical standard, a final approval will be issued.

(6) After the initial approval has been received but before the final approval has been issued, each operator is required to advise the Executive Director within seven days of the intention to present the training programme. Unless otherwise advised, the operator shall make accommodation for an inspector to attend.

2. Approval of contracted training services

(1) An operator may contract crew member training to another organisation provided -

(a) the arrangement is clearly provided for in the approved training programme;

(b) the contracted training organisation is the holder of a valid ATO certificate issued in terms of Part 141, or is otherwise approved by the Executive Director to conduct training;

(c) the contracted organisation uses the manuals and publications approved for use by the operator (SOPs, Aircraft Flight Manual, Aircraft Operating Manual, if applicable, Company Operations Manual, including training and Cabin Crew Member's Manual, etc.);

(d) the operator ensures that the training is conducted in accordance with the approved programme;

(e) where type training is conducted the training is provided on the same type and model aeroplane operated by the operator unless appropriate differences training is provided and described in the approved training programme;

(f) the operator remains responsible to ensure the training records approved in the operator's training programme are completed by the contracted organisation and maintained in the trainee's file at the base of the operator; and

(g) The operator ensures that a service level agreement is in place with the contracted organisation.

121.03.3 FLIGHT CREW MEMBER TRAINING

1. Ground training course syllabi

CAR 121.03.1(4) requires the operator's ground and flight training programme to be developed in detail. In order to properly assess a training programme a detailed syllabus shall be published for each component making up the total programme. The following programme components shall contain the details of at least the following subject areas. While the company induction would normally be the first course provided to a new hire employee the sequence of the following curriculum is not necessarily intended to be sequential to the delivery of an operator's programme.

2. Company induction

(1) Company induction is required only upon initial employment for all flight crew members except where changes in the company are sufficient enough that the Executive Director may require supplemental training for existing flight crew members.

(2) The programme shall ensure that persons involved in flight operations are aware of their responsibilities, know company reporting relationships and are competent to fulfil their assigned duties as related to flight operations.

3. Crew resource management

CRM training shall be based on Fundamental Human Factors Concept, and at a minimum include the following elements:

(a) Threat and Error Management (TEM) that covers the following skill:

(i) Leadership / command

(ii) Decision Making

(iii) Communication

(iv) Situational Awareness

(v) Team Building

(vi) Workload Management

(vii) Vigilance

(viii) Automation Management

(ix) Human Performance

(x) Briefings

(xi) Setting Limitations

(xii) Contingency Management

(xiii) Plan Evaluation

(xiv) Assertiveness.

(b) Line-oriented Flight Training.

4. Cabin safety, emergency equipment and security training

(1) Each flight crew member shall be trained in the operator's cabin safety, emergency equipment and security procedures -

(a) upon initial appointment to the operator and for each aeroplane type to which a crew member is assigned that may employ different equipment or procedures; and

(b) on a recurrent basis every 12 months thereafter, consisting of items from the initial programme that may have changed since the last training session.

(2) Each flight crew member shall be trained in the use of the following emergency equipment during initial training on each new aeroplane type, unless such equipment is the same or similar as previously used, and every three years thereafter -

(a) donning and inflation of life preservers, when equipped;

(b) removal from stowage, deployment, inflation and boarding of life rafts/slide rafts, when equipped;

(c) use of fire extinguishers; and

(d) operation and use of emergency exits.

(3) Training devices approved to simulate flight operating emergency conditions, static aeroplanes, ground demonstrations, classroom lectures where adequate visual aids are provided, films or other devices may be used for training: Provided the method used ensures that each crew member is adequately trained in the operation or use of all emergency equipment. This training should, where practicable, be provided either in whole or in part, as determined by the operator, as part of the CRM training scenario and involve all flight crew members.

(4) Each flight crew member shall be trained in the operator's security policies and procedures and, in particular, the procedures associated with hijacking, bomb threats and unlawful interference.

5. Aeroplane type initial and recurrent ground and flight training

5.1. General

(1) Each flight crew member shall undergo ground and flight training on each aeroplane type to be flown as follows -

(a) upon initial appointment to an aeroplane for which a different type rating is required; and

(b) on a recurrent basis every 12 months thereafter, unless otherwise approved by the Executive Director based on training credits for similar aeroplane types as provided in paragraph (3).

(2) A flight crew member joining an operator with a type rating on the aeroplane to be operated with that operator and whose training and proficiency check on such aeroplane have not lapsed for more than 24 months, shall undergo the operator's recurrent ground and flight training programme, including sufficient training to ensure he or she is familiar with the operator's standard operating procedures. A proficiency check shall be completed following such training.

(3) An operator may be permitted training credits for different types or variants of aeroplanes based on the demonstrated similarities between the aeroplanes, hereinafter referred to as "aeroplane grouping". Notwithstanding approved aeroplane grouping, the initial training shall be completed on each type of aeroplane operated and the subsequent training shall be accomplished on a rotating basis between the aeroplanes involved. For the purposes of this TS and CAR 121.03.3, recurrent training completed on one aeroplane type shall be deemed to have been completed on all aeroplane types for which aeroplane grouping has been approved.

5.2. Ground training

(1) Initial aeroplane type ground training shall consist of a detailed programme covering at least -

(a) all of the aeroplane's systems and their associated limitations, if any;

(b) the aeroplane's normal, abnormal and emergency procedures;

(c) the mass and balance and performance data and calculations; and

(d) the aeroplane's emergency equipment.

Note - *Initial ground training involving emergency equipment may be restricted to the identification of what equipment is on board the aeroplane and its location. Emergency equipment use and practical demonstration requirements are covered under subsection 1.3.*

(2) Recurrent ground training shall consist of a review of such of the subjects outlined in an initial training programme that would ensure critical information is reviewed timeously, including any changes to the aeroplane or operating procedures that occurred since any previous training.

(3) Comprehension examinations shall be administered and successfully completed by the trainee following any ground training and prior to advancing to the next phase of learning.

5.3. Flight training

Note - *For the purposes of this TS, "zero flight time training" means that training on an actual aeroplane is not required.*

(1) The operator shall specify the training syllabi and proposed training times in its operations manual.

(2) Refer to TS 121.03.1 section 2 for the requirements for mandatory FSTD use.

(3) The training times allocated to initial and recurrent flight training shall not be less than -

(a) for initial flight training-

Flight Training (PF Hours)[1]			
Simulator and Aircraft		Level D[2] (simulator only)	Level E[2] (aeroplane only)
Level A, B or C[2]	Aircraft		
10.0	2.0[3]	12.0	12.0[4]

(b) Recurrent flight training-

Recurrent Flight Training (PF Hours)[1] Except as approved in an advanced qualification programme			
Simulator and Aircraft		Level D[2] (simulator only)	Level E[4] (aeroplane only)
Level A, B or C[2]	Aircraft		
4.0	1.5	4.0	3.0[4]

Notes -

1. *Flight training times in the tables are expected to be flight times (block to block). 15 minutes is factored into the ground time for each flight. Time spent in excess of 15 minutes on the ground is to be added to the air time spent in training for aeroplane-only training. Recurrent flight training is an annual requirement. Pilots will complete an equal amount of Pilot Not Flying (PNF) time in addition to the Pilot Flying (PF) times given in the tables.*

2. *The times specified refer to the level of the training programme approved in accordance with subsections 5.3(8) through (12) of this section. FSTDs approved as part of a training programme are characteristically classified as-*

(a) Level A Full Flight Simulator (FFS) - a synthetic training device that has a motion and visual system that permits completion of a visual training programme and OPC. However, the sophistication of the

device is such that there is also a requirement to complete airborne training and an airborne OPC following initial training. Recurrent training and OPCs may be conducted wholly in a Level A device, if approved by the Executive Director;

(b) Level B FFS - a synthetic training device that has a higher fidelity visual and motion system than that of a Level A device. The system allows the device to accurately replicate aircraft handling when within ground effect and permits accurate depth perception and visual cues to assess sink rate. As a result, it has "landing credits" attached to it. All recurrent training and 90 day currency requirements may be completed in a Level B or higher synthetic training device; and

(c) Level C and D FFS - synthetic training devices that have a much higher level of fidelity in their visual and motion systems compared to Level B simulators. Zero flight time may training be authorised for programmes utilising a Level D FFS.

3. May be reduced to that time necessary to complete the following: Provided all other training has been completed in a FFS -

(a) one normal and one balked landing;

(b) one take-off with engine failure after the gear is up;

(c) one full stop landing with simulated engine failure; and

(d) one other landing of any type (flapless, from an IFR approach, etc.).

4. Aircraft-only training to be approved in exceptional instances only.

(4) Initial and recurrent flight training for flight crew members

(a) Flight training for flight crew members shall be carried out in accordance with one of the following training programmes -

(i) level A training programme;

(ii) level B training programme;

(iii) level C training programme;

(iv) level D training programme; or

(v) level E aeroplane-only flight training programme.

(b) Where an operator utilises an FSTD other than those included in the flight training programmes specified in subparagraph (a), the Executive Director shall make a determination with respect to the training and checking credits allowed for such FSTD on a case by case basis.

(5) Recurrent training for all flight crew members shall meet the following requirements -

(a) all items identified in the initial training syllabus shall be covered over a defined period of time (through a cycle); and

(b) a briefing shall be provided on changes that have occurred to the aeroplane or its operation since the flight crew member's last training.

(6) Each operator shall publish a flight training syllabus containing all items and manoeuvres outlined in the applicable training programme unless the training is contracted out, in which case the training syllabus of the contracted agency shall be published and available to the operator's flight crew members.

(7) The flight training syllabus referred to in paragraph (3) shall incorporate training sequences that reflect -

(a) the type of operation, whether VFR, IFR or both;

(b) the type of aeroplane and the equipment carried on board; and

(c) the flight regime in which operated.

(8) Level A training programme for pilots other than cruise relief pilots

(a) An operator with an approved Level A training programme shall provide the flight training using a combination of an approved Level A FFS of the type of aeroplane to be operated and the aeroplane. The operator is permitted to conduct most of the training elements of an initial and recurrent training programme in that simulator. Flight training in an aeroplane shall be carried out for general handling and landing manoeuvres following training as specified in sub-paragraph (c) below.

(b) Flight training shall include and be in accordance with all flight profiles published by the manufacturer, when such profiles are published, including training in normal, abnormal and emergency operation of the aeroplane systems and components using the FFS. For operators of aeroplanes for which standard operating procedures (SOPs) are required, the training shall be given using such SOPs.

(c) In addition to the training in a Level A FFS following initial training and, if required, recurrent training, at least 3 take-offs and landings and the following items and manoeuvres shall be completed in the aeroplane -

(i) interior and exterior aeroplane pre-flight checks;

(ii) ground handling for pilots-in-command only, unless the aeroplane provides full steering capability from the second-in-command (SIC) flight crew stations and company procedures permit the SIC to conduct taxi operations;

(iii) normal take-off, visual circuit, where possible, and landing;

(iv) a full circling approach off an instrument approach to circling minima where the flight crew member is authorised to perform circling manoeuvres;

(v) a simulated engine failure procedure after take-off (at safe altitude and airspeed);

(vi) a normal missed approach;

(vii) a simulated engine inoperative landing; and

(viii) any other manoeuvre for which the simulator was not given training credits.

(d) If a Level A flight simulator has differences in performance, systems or cockpit layout and configuration from the operator's aeroplane, additional training on these differences shall be provided either in the aeroplane or a training device that is representative of the operator's actual aeroplanes and is approved for use by the Executive Director.

(9) Level B training programme for pilots other than cruise relief pilots

(a) An operator with an approved Level B training programme shall provide the flight training using an approved Level B FFS of the type of aeroplane to be operated. Additionally, initial flight training in an aeroplane shall be carried out for ground handling, landing manoeuvres and any other manoeuvre for which the Level B FFS has not been given training and checking credit and shall include, as a minimum, interior and exterior aeroplane pre-flight checks. Flight training in the aeroplane following recurrent FFS training need not be completed.

(b) In addition to the training required in a Level A training programme, training in an approved Level B FFS shall include recovery from turbulence and windshear on take-off and approach.

(c) If a Level B flight simulator has differences in performance, systems or cockpit layout and configuration from the operator's aeroplane, additional training on these differences shall be provided either in the aeroplane or a training device that is representative of the operator's actual aeroplane and is approved for use by the Executive Director.

(10) Level C training programme for pilots other than cruise relief pilots

(a) An operator with an approved Level C training programme shall provide the flight training using an approved Level C FFS of the type of aeroplane to be operated. Except as provided in sub-paragraph (b), initial flight training in an aeroplane shall be carried out for ground handling, landing manoeuvres and any other manoeuvre for which the Level B FFS has not been given a training

and checking credit and shall include, as a minimum, interior and exterior aeroplane pre-flight checks. Flight training in the aeroplane following recurrent FFS training need not be completed.

(b) Zero flight time training for candidates undergoing initial training with at least second-in-command experience on a similar aeroplane with the same operator or has otherwise had verifiable line currency as at least a second-in-command on a similar aeroplane within the previous two years is permitted.

Note - *For the purpose of this provision, "similar aeroplane" means both aeroplanes are operated in terms of Part 121 and are within the following categories -*

1. turbo-jet to turbo-jet;

2. turbo-prop to turbo-prop; and

3. reciprocating to reciprocating.

(c) If a Level C flight simulator has differences in performance, systems or cockpit layout and configuration from the operator's aeroplane, additional training on these differences shall be provided either in the aeroplane or a training device that is representative of the operator's actual aeroplanes and is approved for use by the Executive Director.

(11) Level D training programme for pilots other than cruise relief pilots

(a) An operator with an approved Level D training programme using an approved Level D FFS of the type of aeroplane to be operated is permitted zero flight time training.

(b) If a Level D flight simulator has differences in performance, systems or cockpit layout and configuration from the operator's aeroplane, additional training on these differences shall be provided either in the aeroplane or a training device that is representative of the operator's actual aeroplane and is approved for use by the Executive Director.

(12) Level E aeroplane-only flight training for pilots other than cruise relief pilots

(a) An aeroplane-only flight training programme will only be approved in accordance with the simulator-use policy specified in section 2 of TS 121.03.1 of Document NAM-CATS-OPS 121.

(b) Any simulated failure of aeroplane systems shall only take place under operating conditions which do not jeopardise safety of flight and never with passengers on board.

(c) The training programme shall include and be in accordance with all flight profiles published by the manufacturer, when such profiles are published, including SOPs for normal, abnormal and emergency operation of the aeroplane systems and components.

(13) Cruise Relief Pilot (CRP) Training

(a) Initial training will be to type rating standard and shall consist of -

(i) flight simulator training sufficient to assure that the CRP is proficient with respect to all normal, abnormal and emergency procedures, including upset training on initial and every two years thereafter, that would be encountered during the cruise phase of flight, and instrument flight to an instrument rating standard; and

(ii) operations training sufficient to assure that the CRP is proficient with respect to procedures unique to the airspace that will be flown.

(b) Annual training shall be conducted consisting of selected items from the initial course.

(c) A CRP OPC shall be completed as per Schedule 3 of TS 121.03.11.

6. Line induction training

(1) On initial aeroplane assignment or upgrade line induction training shall be conducted over parts of the operator's route structure which are typical of those over which the flight crew will be expected to fly. Those items that cannot be covered as a natural occurrence during the line flying operations shall be covered by briefing or other discussion.

(2) Line Induction for Flight Crew Members Sectors/Hours Requirements

(a) Initial line induction is required for crew members who have not qualified and served in the same capacity on the same group of aeroplanes.

(b) Transition line induction is authorised for crew members who have qualified and served in the same capacity on the same group of aeroplanes.

(c) For the purposes of this TS, the aeroplane groups are -

(i) reciprocating engine;

(ii) turbo-propeller engine; or

(iii) turbo-jet engine,

aeroplanes.

(d) During line induction, a flight crew member shall be given the minimum flight times and sectors in accordance with this TS while performing the duties appropriate to the crew station. Line induction training is calculated by a combination of flight hours and flight sectors. A flight sector is considered as any flight consisting of a take-off, en route segment of not less than 50 nautical miles and an approach and landing. For the purposes of cruise relief the en route segment only shall be considered as a sector. The required number of flying hours and sectors may be

completed during proving or ferry flights or during normal line operations and apply to the pilot-in-command (PIC), the second-in-command (SIC), cruise relief pilot (CRP) and where applicable, the flight engineer (FE).

(e) Initial line induction shall be conducted under the supervision of a training pilot during which time the PIC and SIC shall perform their duties in their respective position, with the training pilot occupying the opposite pilot operating position.

(f) Initial or upgrade line induction requires that each flight crew member receives the following minimum number of flight sectors-

(i) in the case of PIC and SIC, not less than 6 flight sectors, 3 sectors of which are to be performed as pilot flying and 3 sectors as pilot not flying;

(ii) in the case of a CRP or cruise relief FE, 3 sectors; and

(iii) in the case of FEs, not less than 3 sectors, one of which shall be an originating flight.

(g) Initial or upgrade line induction requires that each flight crew member receives the following minimum number of flight hours -

(i) in the case of aeroplanes with reciprocating engines -

(aa) 15 hours; and

(bb) after completing the 4 mandatory sectors, the remaining time may be reduced by 1 hour for each additional sector flown to a maximum reduction of 7.5 hours;

(ii) in the case of aeroplanes with turbo-propeller engines -

(aa) 20 hours; and

(bb) after completing the 4 mandatory sectors, the remaining time may be reduced by 1 hour for each additional sector flown to a maximum reduction of 10 hours; and

(iii) in the case of aeroplanes with turbo-jet engines -

(aa) 25 hours; and

(bb) no reduction of the original time requirement shall be permitted.

(h) Transition line induction requires that each flight crew member receives the following minimum number of flight sectors -

(i) in the case of PIC and SIC, not less than 3 flight sectors, 1 sector of which is to be performed as pilot flying and 1 sector as pilot not flying;

(ii) in the case of a CRP, or cruise relief FE, 2 sectors; and

(iii) in the case of FEs, not less than 2 sectors, one of which shall be an originating flight.

(i) Transition line induction requires that each flight crew member receives the following minimum number of flight hours -

(i) in the case of aeroplanes with reciprocating engines -

(aa) 10 hours; and

(bb) after completing the 3 mandatory sectors, the remaining time may be reduced by 1 hour for each additional sector flown to a maximum reduction of 5 hours;

(ii) in the case of aeroplanes with turbo-propeller engines -

(aa) 15 hours; and

(bb) after completing the 3 mandatory sectors, the remaining time may be reduced by 1 hour for each additional sector flown to a maximum reduction of 7.5 hours; and

(iii) in the case of aeroplanes with turbo-jet engines -

(aa) 20 hours; and

(bb) after completing the 3 mandatory sectors, the remaining time may be reduced by 1 hour for each additional sector flown to a maximum reduction of 10 hours.

7. Differences and familiarisation training

(1) Where the operator intends to assign a flight crew member to variant types in accordance with
regulation 121.02.9(1)(c), the operator shall determine whether the pilot shall be provided differences or familiarisation training.

(2) Where significant differences exist within the operator's fleet of aeroplanes, or variants of aeroplanes or between the aeroplanes operated and the training device approved for use, the aeroplane type technical and flight training syllabus shall contain such differences training.

(3) Where only minor differences exist within the operator's fleet of aeroplanes, or variants of aeroplanes, or between the aeroplanes operated and the training device approved for use, the aeroplane familiarisation training appropriate to the differences shall be given and recorded in the crew member's training file.

(4) Differences and familiarisation training shall include, as a minimum, a knowledge examination following the ground training. The requirement for a skills test will be determined by the Executive Director based upon an assessment of the degree of the differences.

8. Upgrade training on initial upgrade

(1) Where a person who is currently proficient as a second-in-command (SIC) and has never upgraded to PIC on the class or category of aeroplane to be flown, such person shall undergo upgrade training.

(2) Where a SIC has never upgraded to PIC on the class or category of aeroplane to be flown and whose SIC proficiency has expired within the preceding 24 months, such SIC shall complete a technical ground training course consisting of an aeroplane system review on that aeroplane type prior to or as part of the upgrade training programme.

(3) Prior to or included in the training required by paragraph (1) above, pilots who have not held a valid SIC OPC on the aeroplane type for a period greater than 24 months shall be given a complete initial aeroplane type training course: Provided that a reduction in the ground training and minimum flight hours required may be granted by the Executive Director based on the experience of the flight crew member on that aeroplane type.

9. Pilot qualification to operate in either pilot's seat

(1) A PIC whose duties also require him or her to carry out the duties of pilot-flying and pilot-not-flying from both flight crew stations shall complete additional training and checking as specified in this TS. This additional training shall be accomplished from the SIC crew position and include at least two landings during completion of the following-

(a) an engine failure during take-off;

(b) one engine inoperative approach and go-around;

(c) one engine inoperative landing;

(d) Category II or Category III operations, if applicable; and

(e) operation of the normal and emergency checklist as pilot-not-flying.

(2) The training required by paragraph (1) shall be completed upon initial assignment and every 12 months thereafter unless the pilot has completed all of the training elements specified in the training programme during normal line operations within the preceding 12 month period prior to operating from a seat for which he or she is not qualified.

(3) A record of the training completed and/or operational means of qualifying to act from either flight crew station shall be maintained in the pilot's training file.

10. Regaining recency and requalification training for pilots

10.1. For pilots other than cruise relief pilots - where recency has not been maintained

The following shall be completed for pilots who have not maintained, for a period between 90 and 180 days, their recency qualifications in accordance with CAR 91.02.4 -

(a) a briefing on changes that have occurred to the aeroplane or its operation since the pilot's last flight;

(b) training in an aeroplane or FFS that includes not less than 3 take-offs and landings, an engine failure on take-off, an engine failure on the missed approach and an engine-out landing; and

(c) a line check consisting of at least two sectors during which the candidate will complete all take-offs and landings.

10.2. For pilots other than cruise relief pilots after OPC expiry

(1) Where a pilot's recency requirements have not been maintained in accordance with regulation 91.02.4 and that pilot's OPC has expired for less than 6 months the following shall be completed to regain type qualification -

(a) all the requirements specified in section 11 of this TS; and

(b) any recurrent training, including a OPC, that may have come due during the absence from flying duties.

(2) Where the OPC referred to in paragraph (1) above has expired from between 6 and 24 months, inclusive, the following shall be completed to regain type qualification -

(a) all the requirements of section 11 of this TS;

(b) a technical ground training course consisting of an aeroplane system review and FTD training, where applicable; and

(c) a OPC as specified in this TS.

(3) Where the OPC has expired for a period greater than 24 months a complete initial aeroplane type training course shall be carried out: Provided that a reduction in the ground training and minimum flight hours required may be granted by the Director based on the experience of the flight crew member on that aeroplane type.

10.3. For cruise relief pilots

(1) Where a CRP's recency requirements have not been maintained as specified in CAR 121.02.9(1)(d) for a period of between 90 and 180 days, the following shall be completed to regain type qualification -

(a) a briefing on changes that have occurred to the aeroplane or its operation since the pilot's last flight; and

(b) a LOFT session in a FFS consisting of normal and emergency scenarios, including an emergency descent.

(2) Where the CRP OPC has expired for less than 12 months, competency shall be regained by completing the CRP recurrent training programme;

(3) Where the OPC has expired from between 12 and 24 months, competency shall be regained by -

(a) completing the CRP recurrent training programme; and

(b) completing a technical ground training course consisting of an aeroplane system review and FTD training, where applicable.

(4) Where the OPC has expired for a period greater than 24 months a complete initial aeroplane type training course shall be carried out: Provided that a reduction in the ground training and minimum flight hours required may be granted by the Executive Director based on the experience of the flight crew member on that aeroplane type.

11. ACAS or ACAS II training including ACAS II cyclic training

(1) ACAS training is applicable to all flight crew members where the aeroplane is required to be operated with an approved, serviceable airborne collision avoidance system (ACAS).

(2) An ACAS training programme shall ensure that on completion the pilot is able to demonstrate proficiency in the following -

(a) knowledge of ACAS II concepts, systems and procedures; and

(b) cognitive, procedural and motor skills necessary to properly respond to ACAS advisories.

(3) There are no formal ACAS evaluation requirements for flight testing and examination. An ACAS instructor shall accomplish evaluation of ACAS objectives during training.

(4) A pilot shall complete ACAS initial training in respect of each aeroplane type for which he or she is rated.

(5) ACAS initial training may be provided as a stand-alone module of ground and flight training or may be integrated with other initial, differences or upgrade ground and flight training programmes.

(6) An operator may contract with another operator, or with an ATO approved to operate an aeroplane for instrument flight instruction, to provide the ACAS initial training to its flight crew, provided such contract is in accordance with the provisions specified in TS 121.03.3(2).

(7) An operator shall certify in the pilot's file that the ACAS training and checking has been accomplished to a satisfactory standard.

(8) ACAS renewal training

(a) ACAS renewal training -

(i) shall be integrated with recurrent flight training during proficiency training or line-orientated flight training; and

(ii) ground training shall be provided as a stand-alone module and should address any significant issues identified by line operating experience, system changes, procedural changes or unique characteristics such as the introduction of new aircraft display systems or operations in airspace where high numbers of traffic advisories (TA) and resolution advisories (RA) have been reported.

(b) Routine ACAS operations must be included in all evaluation environments and testing officers should include ACAS as a routine discussion item.

(c) A pilot completes ACAS renewal training when -

(i) an ACAS instructor certifies in the pilot's logbook that the pilot has completed ACAS renewal training conducted by the operator as part of its approved training programme or an ATO approved to operate aircraft for instrument flying training; or

(ii) an NCAA flying inspector certifies in the pilot's logbook that the pilot has completed ACAS renewal training conducted by the NCAA.

(d) An ACAS instructor is deemed to have completed ACAS renewal training when the instructor conducts ACAS initial training or ACAS renewal training.

(9) ACAS cyclic training

(a) A pilot completes a session of ACAS cyclic training when a check pilot certifies in the pilot's logbook that the pilot has successfully completed a training session.

(b) A pilot is deemed to have completed -

(i) ACAS initial training on the first occasion that the pilot completes a session of ACAS cyclic training; and

(ii) ACAS renewal training on the second or a subsequent occasion that the pilot completes a session of ACAS cyclic training.

(c) A check pilot is deemed to have completed ACAS renewal training when the check pilot conducts ACAS cyclic training.

(10) ACAS training programme requirements

(a) Each ACAS curriculum shall ensure the equipment manufacturer's recommended training and testing requirements are carried out in the manner prescribed by such manufacturer.

(b) In any case a pilot's ability to demonstrate system and procedural concepts shall be included in the initial, recurrent and where applicable, the regaining competency testing.

12. Reduced Vertical Separation Minima (RVSM) training

(1) No pilot may operate in RVSM airspace unless such pilot has received initial training from an approved training organisation or through an operator's approved training programme with respect to operating in RVSM airspace and, for pilots who have not operated in RVSM airspace in the preceding 12 months, recurrent training.

(2) For a flight crew member to qualify for operations in RVSM airspace, he or she shall be proficient in the following areas -

(a) knowledge of the floor, ceiling and horizontal boundaries of the RVSM airspace to be operated in;

(b) rules on exclusion of non-RVSM compliant aircraft;

(c) pilot procedures with respect to -

(i) pre-flight and in-flight altimeter checks;

(ii) use of the automatic altitude control system;

(iii) minimum equipment list (MEL) items applicable to RVSM operations;

(iv) special procedures for in-flight contingencies;

(v) weather deviation procedures;

(vi) track offset procedures for wake turbulence and inconsequential collision avoidance systems alerts; and

(vii) pilot level-off call; and

(d) use of ACAS.

13. Line oriented flight training (LOFT)

The following attributes are considered to be appropriate for a LOFT training session -

(a) sessions are accomplished on a real-time basis without interruption by the instructor.

Strict attention is paid to realism through the duplication of line environmental conditions. Where the route segments for the aeroplane type are inordinately long, the cruise portion of the segment can be broken;

(b) a line qualified or line familiar PIC, SIC and FE/second officer, as applicable, is required for recurrent, upgrade or regaining competency training;

(c) LOFT training is conducted without the requirement for a passing grade. If deficiencies are identified, further training is provided;

(d) all training is conducted in Level C or Level D FSTDs or a Level A or Level B FSTD where it meets the minimum requirement of the LOFT programme;

(e) the flight shall be planned as one would a real line trip. All communication must be conducted in a manner normally found on a line flight. The operator shall use recognisable company route and airports or, if not available, similar routes; and

(f) a LOFT facilitator guide shall be developed which will contain a detailed script of all sequences and scenarios for each LOFT session, instructions for facilitator role playing, adherence to the script and conformance to realism in briefings and operational conditions.

14. Training and qualifications for low visibility operations

(1) General

(a) Low visibility operations (LVO) are comprised of lower-than-normal visibility minima take-off (LVTO) and lower-than-normal weather and visibility minima approach operations (Category II and III (CAT II/III) approaches).

(b) An operator must ensure that flight crew member training programmes for LVO include structured courses of ground, simulator and flight training. The training is aeroplane-specific; however, credits may be given from one aeroplane type to another based on the similarities between the types. The operator may abbreviate the course content as prescribed by sub- paragraphs (d), (e) and (f) below provided the content of the abbreviated course is acceptable to the Executive Director.

(c) Flight crew members with no CAT II or III experience must complete the full training programme prescribed in paragraphs (2), (3) and (4) below.

(d) Flight crew members with CAT II or III experience with another owner or operator may undertake an abbreviated ground training course but shall complete the flight training, check and line flying under supervision.

(e) Flight crew members with CAT II or III experience with the owner or operator may undertake an abbreviated ground, simulator and/or flight training course, which shall include at least the requirements of paragraphs (5)(a) or (b), as appropriate, of this section.

(2) Ground training

An operator shall provide a ground training programme commensurate with its approvals. Such training shall be given to flight crew members upon their initial introduction to LVTO or CAT II/III operations and thereafter as required to introduce new policies, procedures or equipment associated with LVO.

(3) Flight training

(a) An operator shall use an approved simulation training device (FSTD) for the training and checking of flight crew members in LVO.

(b) An operator must ensure that each flight crew member is trained to carry out his or her duties and instructed on the coordination required with other flight crew members.

(4) Conversion training requirements to conduct low-visibility take-off and CAT II and III operations

An operator must ensure that each flight crew member completes the following low visibility procedures training if converting to a new type or variant of aircraft in which LVTO and CAT II and III operations will be conducted. The flight crew member experience requirements to undertake an abbreviated course are prescribed in paragraph (1)(d) and (e) above.

(a) Ground training -

The appropriate requirements prescribed in paragraph (2) above shall be completed, taking into account the flight crew member's LVTO and CAT II and III training and experience.

(b) FSTD training -

(i) a minimum of 8 LVTO departures and CAT II/III approaches in a simulator approved for the purpose;

(ii) a minimum of 5 landings following CAT II/III approaches of which at least 2 shall be with an engine out;

(iii) a minimum of 3 missed approaches initiated at various stages of the approach, during which at least one engine failure shall be introduced; and

(iv) appropriate additional training if any special equipment is required such as head-up displays or enhanced vision equipment.

(5) Line flying under supervision

An operator must ensure that each flight crew member undergoes the following line flying under supervision -

(a) for CAT II when a manual landing is required, a minimum of 3 landings from autopilot disconnect; and

(b) for CAT III, a minimum of 3 auto-lands except that only 1 auto-land is required when the training required in paragraph (3) or (4), as applicable, has been carried out in a full flight simulator usable for zero flight time training.

(6) Type and command experience

(a) The following additional requirements are applicable to pilots-in-command who are new to the aircraft type-

(i) 50 hours or 20 sectors, whichever is later, as pilot-in-command on the type before performing any CAT II or III operations; and

(ii) 100m must be added to the applicable CAT II or III RVR minima unless he or she has previously qualified for CAT II or III operations with another owner or operator until attaining 100 hours or 40 sectors, whichever is later, as pilot-in-command on the type.

(b) The Executive Director may authorise a reduction in the above command experience requirements for flight crew members who have CAT II or III command experience.

(7) LVTO

(a) An operator must ensure that prior to authorisation to conduct take-offs with RVR below 400m the following training is carried out -

(i) normal take-off in minimum authorised conditions or RVR conditions;

(ii) take-off in minimum authorised conditions or RVR conditions with an engine failure between V1 and V2 or as soon as safety considerations permit; and

(iii) take-off in minimum authorised conditions or RVR conditions with an engine failure before V1 resulting in a rejected take-off.

(b) An operator shall ensure that the training required by paragraph (3) or (4) above, as appropriate, above is carried out in an approved simulator. This training shall include the use of any special procedures and equipment.

(c) An operator must ensure that a flight crew member has completed a check before conducting low visibility take-offs with an RVR of less than 400m.

(8) LVO recurrent training and checking

(a) An operator must ensure that, in conjunction with the normal recurrent training and pilot proficiency checks, a pilot's knowledge and ability to perform the tasks associated with the particular category of operation, including LVTO, for which he or she is authorised, is checked. The required number of approaches to be conducted during such recurrent training is to be a minimum of two, one of which is to be a missed approach and at least one low visibility take-off to the lowest applicable minima. The period of validity for this check shall be the same as the recurrent training approved for the operator.

(b) For LVO training and checking, an operator shall use an approved flight simulator.

(c) An operator must ensure that, for CAT III operations on aeroplanes with a fail passive flight control system, a missed approach is completed at least once every 18 months as the result of an autopilot failure at or below decision height when the last reported RVR was 300m or less.

(9) LVTO and CAT II or III recency requirements

(a) An operator must ensure that, in order for pilots to maintain a CAT II or III qualification, they have conducted a minimum of 3 approaches and landings using approved CAT II or III procedures during the previous six month period, at least one of which must be conducted in the aircraft.

(b) Recency for LVTO is maintained by retaining the CAT II or III qualification prescribed in sub-paragraph (a) above.

(c) An operator may not substitute this recency requirement for recurrent training.

15. Dangerous goods

(1) An operator authorised to transport dangerous goods shall complete the training specified in regulation 92.00.8 and publish such training in its operations manual.

(2) An operator not authorised to transport dangerous goods shall complete dangerous goods awareness training for operations personnel and other employees likely to come into contact with passengers or their baggage or personal effects -

(a) upon initial employment; and

(b) every 24 months thereafter.

15A. Upset prevention and recovery training (UPRT)

(1) The UPRT is applicable to crew members, with the purpose being to assist in combating Loss of Control in Flight (LOC-I).

(2) A UPRT training programme shall be structured in such a way that upon completion, the crew is able to demonstrate -

(a) knowledge of UPRT concepts and procedures; and

(b) skills necessary to properly respond to LOC-I situations.

(3) There are no formal UPRT evaluation requirements for flight testing and examination. A UPRT instructor shall accomplish evaluation of UPRT objectives during training.

(4) UPRT initial training may be provided as a stand-alone module of ground and flight training.

(5) An operator may contract with another operator, or with an ATO approved to conduct UPRT, to provide the UPRT to its flight crew.

(6) An operator shall certify in the pilot's file that the UPRT and checking has been accomplished to a satisfactory standard.

(7) UPRT training shall consist of -

(a) initial training. This training shall include academic training and practical flight instruction on a suitable aircraft or simulator;

(b) recurrent training. A UPRT refresher course including UPRT academic and practical training must be completed at least once each 36-month period; and

(c) A pilot logbook endorsed, shall be certified by a UPRT Instructor on completion of an initial or recurrent UPRT program.

(8) An air service operator shall comply with the following UPRT programme requirements -

(a) each UPRT curriculum shall ensure the aircraft manufacturer's recommended training and testing requirements are carried out in the manner prescribed by such manufacturer; and

(b) a pilot's ability to demonstrate system and procedural concepts shall be included in the initial, recurrent and where applicable, the regaining competency testing.

(9) Prior to providing instruction on UPRT, an instructor shall -

(a) undergo specific UPRT instructor training prior to providing UPRT to crew members;

(b) be trained and qualified to conduct training in the FSTD or aircraft;

(c) understand the capabilities and limitations of the FSTD, to avoid negative transfer of training; and

(d) hold a certificate and rating in the category and class of aircraft for which they are training

(10) Simulator utilized for UPRT training. Fidelity limitations for each specific FSTD used in UPRT may introduce potential for negative training. The simulator shall be -

(a) approved by the Authority to provide UPRT;

(b) operated within the aeroplane fight envelope used for the FSTD qualification, up until full aerodynamic stalls;

(c) used for post aerodynamic stall training if –

(i) control, response, cueing and performance characteristics are evaluated by a subject matter expert acceptable to the Authority, to ensure that they are similar to those expected in flight; or

(ii) the simulator has a type-representative post-stall aerodynamic model upgrade; and

(d) used at the boundaries of the flight envelope only if –

(i) evaluated by a subject matter expert acceptable to the Authority, to assess the capabilities and limitations of the device; or

(ii) enhanced IOS tools are installed that convey when the simulator data is no longer valid or when the aeroplane operational envelope has been exceeded or when inappropriate control inputs have been used.

(11) UPRT delivered on an aircraft shall meet the following requirements-

(a) A margin of safety shall be provided for any manoeuvring to be performed;

(b) Aircraft shall be certified for aerobatic manoeuvres.

16. Other courses of training as deemed appropriate by the Executive Director

(1) CAR 121.03.3(1)(q) makes provision for the Executive Director to determine, in consideration of the type of operation being conducted or applied for, whether it would be prudent to expand a training programme to include other courses of study.

(2) Provided that an operator is authorised to conduct the following specialised operations, the associated courses are considered to be necessary to ensure safety of flight during operations -

(a) EDTO;

(b) all weather operations;

(c) RNAV;

(d) GNSS;

(e) land and hold short operations; and

(f) simultaneous operations on parallel or near-parallel instrument runways - ILS/Precision Runway Monitor (PRM) and Localizer Type Directional Aid (LDA)/PRM - Simultaneous Offset Instrument Approaches (SOIA) Training.

(3) Other courses that may be considered necessary to ensure safety of flight operations may include but not be limited to -

(a) MEL training;

(b) high altitude training;

(c) operations in ground icing conditions, if applicable;

(d) one-engine Inoperative ferry flight training;

(e) CFIT;

(f) low-energy awareness training; and

(g) other relevant subjects identified from time to time.

17. Security training

(1) An air service operator shall in terms of Part 111, establish and maintain an approved air carrier security programme which ensures crew members conduct themselves in the most appropriate manner to minimize the consequences of acts of unlawful interference. In order to ensure that crew members are appropriately trained, an air service operator shall, as a minimum, include the following security training elements in the air service operator approved training programme:

(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) understanding of behaviour of terrorists so as to facilitate the ability of crew members to cope with hijacker behaviour and passenger responses;

(f) live situational training exercises regarding various threat conditions;

(g) flight grew compartment procedures to protect the aeroplane; and

(h) aeroplane search procedures and guidance on least-risk bomb locations where practicable.

(2) An air service operator shall also establish and maintain a requirement in its approved 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.

121.03.4 ADVANCED QUALIFICATION PROGRAMME

(1) Advanced qualification programme (AQP) training in lieu of a 6 month pilot proficiency check (OPC) may be approved: Provided the following conditions are met -

(a) Pilots, after an initial OPC on type, shall be required to complete at least the first due recurrent OPC. Thereafter, the pilot proficiency requirements may be met by alternating the AQP training and a OPC every six months. In no case shall a period longer than 12 months pass between successive OPCs.

(b) The operator shall submit for approval an AQP training programme. The programme shall be based on the use of an approved FSTD as follows -

(i) for all advanced technology aeroplanes and all turbo-jets certificated for 50 or more passengers, this training shall be conducted in a FSTD, regardless of its location. "Advanced technology aeroplanes" include the following types as well as aeroplanes of any manufacturer for which a type certificate was issued subsequent to that of these aeroplanes -

(aa) Airbus A319, A320, A321, A330, A340 and A380; or

(bb) Boeing B757/767, 777 and B747-400; and

(ii) for aeroplanes certified for less than 50 passengers, this training shall be conducted in a FSTD if one for that type is reasonably available. "Reasonably available" shall be taken to mean within a 14 hour travel day by the most direct means.

(c) The AQP training shall be in addition to the normally required training and be of 1.0 to 1.5 hours duration. The training must be incorporated in a LOFT scenario where the FSTD capability permits and meets the requirements of a LOFT in accordance with TS 121.03.3(13).

(d) If training is completed in a FSTD, the 12 month OPC shall also be completed in the FSTD.

121.03.5 AEROPLANE TYPE AND DIFFERENCES TRAINING

Note - *See Table 1 following TS 121.03.9 for training requirements for all phases of training.*

1. General

(1) A cabin attendant shall complete the initial type-rating training on each aeroplane the operator intends to employ the cabin attendant, notwithstanding that the cabin attendant has a type-rating on an aeroplane of a type used by the operator.

(2) An operator shall ensure that -

(a) type and differences training are conducted by NCAA-approved instructors or designated examiners (DEs); and

(b) during type, and if applicable, differences training, training is given on the location, removal and use of all emergency and survival equipment carried in the aeroplane, as well as all emergency procedures and emergency training related to the aeroplane type, variant and configuration to be operated.

2. Operation of doors and exits

An operator shall ensure that -

(a) each cabin crew member operates and actually opens all normal and emergency exits for passenger evacuation in an aeroplane or representative training device; and

(b) the operation of all other exits is demonstrated.

3. Evacuation slide training

An operator shall ensure that -

(a) each cabin crew member descends on an evacuation slide from a height representative of the aeroplane main deck sill height;

(b) the slide is fitted to an aeroplane or a representative training device; and

(c) a further descent is made when the cabin crew member qualifies on an aeroplane type in which the main deck exit sill height differs significantly from any aeroplane type previously operated.

4. Evacuation procedures and emergency situations

An operator shall ensure that -

(a) emergency evacuation training includes the recognition of planned or unplanned evacuations on land or water. This training shall include recognition of when exits are unusable or when evacuation equipment is unserviceable; and

(b) each cabin crew member is trained to deal with the following -

(i) an in-flight fire, with particular emphasis on identifying the actual source of the fire;

(ii) sudden decompression, including the donning of portable oxygen equipment; and

(iii) other in-flight emergencies.

5. Pilot incapacitation

An operator shall ensure that, unless the minimum flight crew is more than two, each cabin crew member is trained to assist if a pilot becomes incapacitated. This training shall include a demonstration of -

(a) the pilot's seat mechanism;

(b) fastening and unfastening the pilot's seat harness;

(c) use of the pilot's oxygen equipment; and

(d) use of pilots' checklists.

6. Safety equipment

An operator shall ensure that each cabin crew member is given realistic training on, and demonstration of, the location and use of safety equipment where applicable, including the following -

(a) slides, and where non self-supporting slides are carried, the use of any associated ropes;

(b) life-rafts and slide-rafts, including the equipment attached to, and/or carried in, the raft;

(c) life-jackets, infant life-jackets and flotation cots;

(d) dropdown oxygen system;

(e) first aid oxygen;

(f) fire extinguishers;

(g) fire axe or crow-bar;

(h) emergency lights, including torches;

(i) communications equipment, including megaphones;

(j) survival packs, including their contents;

(k) pyrotechnics (actual or representative devices);

(l) first aid kits, universal precaution kits and emergency medical equipment, including their contents; and

(m) other cabin safety equipment or systems where applicable.

7. Passenger briefing/safety demonstrations

An operator shall ensure that training is given in the preparation of passengers for normal and emergency situations in accordance with CAR 91.07.20.

121.03.6 OPERATOR INDUCTION TRAINING

1. Operator induction training

(1) General.

An operator shall provide training to an initial hire cabin crew member covering the following topics:

(a) company mission statement and goals, history, organisation, structure, reporting, relationships, communication procedures and administrative procedures;

(b) AOC and operations specification details regarding fleet and routes;

(c) QMS;

(d) SMS;

(e) Operations manual, cabin crew manual and documentation. The following components shall be included:

(i) standard operating procedures;

(ii) revision and amendment processes;

(iii) roles and responsibilities of the air service operator and its crew members;

(iv) type training in aircraft systems, equipment and emergency procedures applicable to the air service operator;

(v) security awareness training and air service operator specific security procedures;

(vi) pre-flight briefing content including confirmation as to the discreet alerting procedures for suspected security breaches;

(vii) air service operator specific ground handling procedures;

(viii) air service operator specific medical emergency procedures;

(ix) handling of persons with disabilities, unaccompanied minors and infants;

(f) Familiarisation Flight;

(g) Flight Deck Observation Flight; and

(h) Senior Cabin Crew Member (SCCM) Training course, if applicable.

(2) An air service operator shall ensure that company induction training as provided for in subregulation 1. (1) (e) and (h)) is conducted by an approved Cabin Crew Instructor or Cabin Designated Examiner.

2. Flight deck observation flight

(1) A cabin crew member shall have an understanding of the flight deck crew duties, responsibilities, workloads and expectations for all phases of flight.

(2) At least one flight deck observation flight shall be completed on initial hire at an operator.

(3) Each cabin crew member shall be in uniform and shall, in addition to the minimum cabin crew requirements, not be assigned any normal safety or cabin service duties.

(4) A flight deck observation flight shall begin at the regular sign-on time for the flight deck crew.

(5) Each cabin crew member shall observe the normal pre-flight pilot duties, such as flight planning, weather briefing, flight deck crew briefing and pre-flight walkaround which includes –

(a) flight deck workloads and safety duties;

(b) flight crew communication procedures;

(c) flight crew co-ordination procedures;

(d) flight deck layout;

(e) location of emergency equipment;

(f) location and operation of flight deck windows;

(g) location and operation of flight deck escape hatches;

(h) location of controls and operation of pilot and observer seats;

(i) location and operation of flight deck oxygen; and

(j) location of emergency checklists.

(6) Each cabin crew member shall participate in a post-flight debriefing after the flight deck observation flight.

3. Senior cabin crew member training

(1) A senior cabin crew member training shall, as a minimum, cover the following topics:

(a) briefings – in normal, abnormal and emergency situations which shall include non-routine circumstances of flights;

(b) communication, cooperation and coordination with crew and other personnel shall include the following as a minimum:

(i) the concept of the crew member's role and responsibilities and the chain of command on board an aircraft;

(ii) the importance of crew coordination and communication;

(iii) awareness of multi-cultural and multi-national crews; and

(iv) procedures in the event of cabin crew and flight crew member incapacitation;

(c) operator's manuals, procedures, checklists and regulatory requirements shall include the following as a minimum:

(i) operator approved manuals;

(ii) minimum equipment list, including cabin defects;

(iii) duties and responsibilities related to operator's standard operating procedures, as required by the position;

(d) reporting and recording system requirements shall include the following as a minimum:

(i) an operator's reporting systems such as hazards, incidents, accidents and both voluntary and mandatory occurrence reporting;

(ii) an operator's recording systems such as flight reports, security and checklists; and

(iii) duties and responsibilities specific to the senior cabin crew member, including documentation such as route briefings, working positions lists;

(e) FDP and fatigue management which shall include the following as a minimum:

(i) flight and duty time limitations;

(ii) rest requirements – in-flight and ground rest;

(iii) fatigue management and associated risks which includes physiological aspects of fatigue and fatigue countermeasures, such as basics of fatigue, sleep fundamentals, the effect of disturbing the circadian rhythms, the cause of fatigue and the effects on performance, the influence of lifestyle, including nutrition and exercise, sleep disorders, the effects of long-range operations, heavy short-range schedules, operating through and within multiple time zones and crew responsibilities; and

(iv) fatigue reporting;

(f) CRM principles shall include the following as a minimum:

(i) overview of human factors, CRM, threat and error management TEM and human performance;

(ii) review of skills and application of skills specific to senior cabin crew member; flexibility, empathy, delegation, and planning and coordinating resources and their application in the management of specific occurrences, including but not limited to:

(aa) passenger management;

(bb) security incidents; and

(cc) the management of medical diversions;

(iii) operator's safety culture; and

(iv) CRM aspects specific to the aircraft type such as narrow and wide body;

(g) administrative tasks required by the operator shall include, as a minimum, completion and submission of forms and checklists; and

(h) leadership skills including conflict management.

(2) Senior cabin crew member recurrent training shall include the initial training syllabus and the following topics:

(a) safety review or reinforcement from sources such as SMS, audit feedback; and

(b) operator procedural reminders and legal updates.

121.03.8 RECURRENT TRAINING

Note - *See Table 1 following TS 121.03.9 for training requirements for all phases of training.*

Recurrent Training Syllabus

1. Aviation - General

A cabin crew member shall complete the recurrent training on each aeroplane on which the crew member operates.

1.1. Regulatory overview

1.1.1. Training objective

The cabin crew member must identify and describe the legislation relating to flight crew members. An asterisk (*) denotes operator applicable components. Should a * be listed next to a component of training that is not applicable to the operator, this component of training may be omitted.

2. Roles and responsibilities

2.1. Cabin crew members

2.1.1. Training objective

The cabin crew member will be able to describe their legislated roles and responsibilities relating to their duties and in the interests of aviation safety.

2.1.2. Syllabus

(1) General

(a) Describe the responsibility of cabin crew members to maintain knowledge of all safety and emergency procedures relating to their duties.

(b) Identify the requirement for cabin crew members to perform their duties in accordance with the operations manual.

(c) Outline cabin crew member responsibilities to ensure all flight documentation, publications, manuals are up to date and available on board and that cabin crew members are familiar with their contents. Cabin crew members are required to ensure that -

(i) competency qualification documents signed by the authorised operator personnel, as designated in the operations manual, date of expiry, specific aircraft types and series which the cabin crew member is qualified to operate on;

(ii) a record of revisions is in the flight attendant manual (FAM) tracking the amendments received and when they were inserted into the FAM;

(iii) all amendments are inserted in the appropriate section of the FAM and not in their issued format, i.e. stapled, cello-wrapped; and

(iv) operations manual and revisions - see roles and responsibilities.

(d) Identify the responsibility of cabin crew members to report any on-board safety concerns to the pilot-in-command, including the use of discrete signals to the flight deck.

(e) Identify the requirement to keep all documentation relative to flight duties up to date at all times, i.e. licence.

(f) Outline cabin crew member responsibilities to ensure that all equipment is operable.

(g) Review the responsibility for cabin crew members to successfully complete required training and qualifications.

(h) Define the chain-of-command and describe the authority of the pilot-in-command and describe their importance relating to flight safety.

(i) Describe the requirement to be aware of the duties and responsibilities of other flight crew members and be prepared to assume those duties, if necessary.

(j) Define the procedure regarding attending and participating in cabin crew briefings.

(k) Review the importance of cabin crew members to be constantly alert and therefore prepared to handle any abnormal/emergency situation as it may occur.

(l) Update general security awareness and review aeroplane-specific security procedures.

3. Safety procedures

3.1. Communication

3.1.1. Training objective

The cabin crew member will be able to describe and demonstrate the importance and the procedures for effective communication in normal, abnormal/non-routine and emergency situations.

3.1.2. Syllabus

(1) General

(a) Describe the procedures for normal, abnormal/non-routine and emergency communication.

(b) Describe the importance of effective communication especially when dealing with abnormal and emergency situations.

(c) Describe the responsibility of cabin crew members to provide complete and accurate information to the pilot-in-command to assist in decision-making.

(2) Communication

(a) Review the difference between verbal and non-verbal communication and describe the effects of communicating different messages. Describe the potential hazards to flight safety if communication is not effective.

3.2. Surface contamination

3.2.1. Training objective

The cabin crew member will be able to define what is meant by surface contamination, describe his or her responsibilities and identify the procedures for reporting suspected surface contamination to the pilot-in-command.

3.2.2. Syllabus

(1) General

(a) Define surface contamination and hazards to flight associated with surface contamination.

(b) Define aircraft critical surfaces for each of the aircraft types in the operator's fleet.

(c) Identify an awareness of the conditions most likely to produce surface contamination.

(d) Give examples of a clean wing, and visible signs of surface contamination, e.g. frost, ice, snow, including rain and clear, etc.

(2) Cabin crew responsibilities

(a) Define the responsibilities of cabin crew members to report suspected surface contamination prior to take-off roll to the pilot-in-command as soon as it is discovered.

(b) State the requirement for the pilot-in-command or a person designated by the pilot-in-command, to investigate reports of suspected surface contamination.

(c) Describe the advice to passengers whenever aircraft de-icing is taking place and who is responsible for this announcement.

(3) De-icing*

(a) Describe when the senior cabin crew member will be advised in adverse weather conditions whether or not de-icing will occur.

(b) Describe the different types of equipment used to accomplish de-icing. Example: cherry-picker, wash, etc.

Note - Use of video or photographic material is recommended.

(c) Identify that icing conditions can recur on critical surfaces of the aircraft if the take-off is prolonged for any period of time after de-icing has occurred.

(d) Describe the possible hazards whenever de-icing is taking place, i.e. inhaling de-icing fluid, de-icing fluid entering cabin through open doorways, the presence of glycol fumes in the cabin. Identify the procedures to deal with these situations.

3.3. Briefings

3.3.1. Training objective

The cabin crew member will be able to identify the different types of briefings which are required by the operations manual and the information which must be included in each.

3.3.2. Syllabus

(1) Cabin crew briefings

(a) Identify the importance of cabin crew briefings including enhancing cabin crew communication and co-ordination, establishing expectations and clarifying procedures.

Note - *Where operationally practicable, the pilots and cabin crew members should combine their briefings.*

(b) Outline when cabin crew briefings are required including normal, abnormal and emergency situations.

(c) Identify the types of flight crew briefings, i.e. pilot-in-command/cabin crew member and senior cabin crew member/other cabin crew members.

(d) Describe the topics to be covered in the cabin crew briefing(s).

(e) Identify the cabin crew member responsibility to ask questions if all the required information has not been given in a briefing or if the information is unclear.

(f) Identify who is required to attend each type of briefing and their expected level of preparedness and participation.

(2) Passenger briefings

(a) Review the contents of the following mandatory announcements and when they must be performed -

(i) cabin baggage;

(ii) pre-flight safety announcement/demonstration;

(iii) after take-off;

(iv) en route turbulence;

(v) pre-landing; and

(vi) after landing.

3.4. Pre-flight checks

3.4.1. Training objective

The cabin crew member will be able to identify the importance of pre-flight checks and will define what is meant by the aircraft minimum equipment list.

3.4.2. Syllabus

(1) General

(a) Identify the importance of pre-flight checks and the impact on flight safety.

(b) Define what is meant by the minimum equipment list and identify the cabin items which are included.

(c) Identify types of conditions which may have airworthiness implications and which should be brought to the immediate attention of the pilot-in-command, i.e. cracked windows, damaged

door seals, excessive water spills or leaks, obvious structural damage.

3.5. Passenger handling

3.5.1. Training objective

The cabin crew member will be able to identify the types of passenger which may be carried and the general handling considerations which relate to safety.

3.5.2. Syllabus

(1) General*

(a) Describe the procedures for acceptance and carriage of the following and include special handling considerations, seating and securing the persons and the equipment for all phases of the flight -

(i) incubators;

(ii) stretchers;

(iii) disabled persons;

(iv) persons travelling with medical oxygen;

(v) child restraint system; and

(vi) guide and service animals.

(b) Identify the operator's policy for accepting or denying boarding to passengers and who is responsible for making this decision.

(c) Identify the procedures for handling special passengers, i.e. restrictions on different aircraft types.

(d) Outline the regulatory requirements regarding passengers who appear to be impaired due to alcohol or drugs, and the operator's policies and procedures regarding alcohol service to passengers. Include cabin crew responsibilities in serving passengers who appear to be impaired.

(e) Identify the procedures for dealing with unruly passengers.

(2) Passenger boarding

(a) Define cabin crew member responsibilities for passenger supervision while the aircraft is on the ground, including boarding, disembarking and station stops. Include the number of cabin crew members that must be present in the aircraft for the above.

(b) Review the importance of safety duties over service duties during passenger boarding.

3.6. Passenger and flight crew seats/restraints

3.6.1. Training objective

The cabin crew member will be able to identify the requirements and established procedures relating to on-board seating for passengers and flight crew members.

3.6.2. Syllabus

(1) Passenger seating

(a) Define exit row and describe the operator's policy and procedures regarding exit row seating, and who may not occupy seats in these rows.

(b) Describe the procedures associated with the relocation of passengers in compliance with exit row seating policies.

(c) Describe where special attention passengers may be seated, taking into consideration proximity to exits, availability of supplemental oxygen, ease of evacuation, etc.

(d) Identify the passenger seating restriction on aircraft equipped with upper deck/lower deck passenger seating where applicable.

(e) Outline the seating restrictions regarding arm held infants.

(f) Describe the procedures for the use of on-board skycots, stating when these devices may be used, and restrictions regarding the occupant of the skycot.

(g) Identify any placards or signage associated with passenger seating and describe appropriate usage. Example: "Seat Unserviceable", "For Crew Use Only" *

(2) Flight crew seating

(a) Describe the importance of ensuring serviceability of cabin crew seats, who is responsible to ensure this, when to check serviceability.

(b) Identify the components of a pre-flight serviceability check for a cabin crew seat, e.g. "sit and fit" to enable quick access.

(c) Describe the procedures to follow and approved alternate seating in case of an unserviceable cabin crew seat.

(d) Describe the requirements for cabin crew to be seated with restraint system fastened for taxi (except for safety related duties), take-off, landing and turbulence whenever directed to do so by the pilot-in-command.

(e) Identify the signals/verbal command for cabin crew members to take their assigned seats and to secure themselves. State who is responsible for these signals.

3.7. Cabin baggage

3.7.1. Training objective

The cabin crew member will be able to define what is meant by cabin baggage and will describe the procedures for accepting and stowing cabin baggage and any applicable restrictions.

3.7.2. Syllabus

(1) Passenger cabin baggage

(a) Describe the operator's procedures for dealing with carry-on baggage that cannot be correctly stowed.

(b) Describe the requirement to keep the exit areas clear and free from obstructions, such as cabin baggage.

(c) Describe the requirement to maintain clear access to emergency equipment.

3.8. Electronic devices

3.8.1. Training objective

The cabin crew member will be able to define what is meant by electronic devices, and describe policies and procedures for their acceptance and use on board aircraft.

3.8.2. Syllabus

(1) General

(a) An update of the electronic devices currently carried on board aircraft and relevant policy amendments.

(b) Review the safety concerns associated with the use of mobile listening devices type headsets during critical phases of flight, abnormal operations, boarding and disembarking across an open ramp.

3.9. Service to passengers on the ground

3.9.1. Training objective

The cabin crew member will be able to review what is meant by service to passengers on the ground, the conditions under which this can be accomplished and the procedures to do so.

3.9.2. Syllabus

(1) Cabin crew responsibilities

(a) Review the need for flight crew communication and whenever passenger service is being offered on the ground, i.e. cabin crew to let pilot know service is taking place and pilot to let cabin crew know how much time before taxiing.

(b) State the requirement for the pilot-in-command to give cabin crew adequate notice prior to taxi so that equipment and supplies may be stowed and pre-take-off duties can be completed.

3.10. Fuelling with passengers on board

3.10.1. Training objective

The cabin crew member will be able to identify the regulatory requirements regarding fuelling with passengers on board and the procedures established for this situation.

3.10.2. Syllabus

(1) General

(a) List the potential hazards associated with fuelling aircraft to occupants and the aircraft.

(b) Identify the types of fuelling procedures which require that passengers and flight crew be off-loaded and why the potential hazard is greater.

(c) Describe the procedures and precautions for fuelling with passengers on board.

(d) Define what is meant by designated evacuation exits during fuelling and associated procedures.

(2) Cabin crew responsibilities

(a) Identify flight crew responsibilities and communication when fuelling with passengers on board.

(b) Describe the fuel leak or spill procedures and identify the communication and co-ordination procedures cabin crew members are responsible for as contained in the operations manual.

(c) Describe the procedures whenever fumes are detected in the cabin including flight crew communication and the decision to disembark passengers.

3.11. Pre-take-off and pre-landing

3.11.1. Training objective

The cabin crew member will be able to identify safety procedures associated with take-off and landing and be able to implement them.

3.11.2. Syllabus

(1) Cabin crew responsibilities

(a) Identify when cabin crew members are required to violate the sterile flight deck rule. Describe safety related information that should be conveyed and the requirement to be clear, concise, specific; and

(b) Define "silent review" and identify the components, when it must be done and who is required to complete it.

(2) Abnormal situations

(a) Define "rejected take-off" and describe the associated procedures.

(b) Define "missed approach" and describe the associated procedures.

(c) Define abnormal landing situations e.g. no landing gear, partial landing gear, burst tyres/deflated tyres.

(d) Identify cabin, galley and passenger safety checks.

3.12. Propeller abnormalities*

3.12.1. Training objective

The cabin crew member will be able to identify the characteristics of over-speeding and a runaway propeller and be aware of the procedures associated with this situation.

3.12.2. Syllabus

(1) General

(a) Define what is meant by over-speeding propeller/runaway propeller, and emergencies that may occur as a result.

(b) Describe how to recognise these propeller malfunctions and their effect on flight characteristics.

(c) Identify the flight crew communication procedures associated with these propeller abnormalities.

(d) Outline the procedures for relocating passengers.

(e) Identify propeller abnormalities, propeller functioning turn/no turn.

3.13. Apron safety

3.13.1. Training standard

The cabin crew member will be able to identify the components of apron safety, the responsibilities for passenger movement on aerodrome aprons and the procedures established to accomplish this safety.

3.13.2. Syllabus

(1) Hazards on aprons

(a) Identify the hazards associated with aerodrome apron example: aircraft/ground service traffic, noise and weather, foreign objects.

(b) Describe the hazards associated with traffic on the apron, including aircraft movement, propellers, jet blast/exhaustion, vehicles.

(2) Cabin crew responsibilities

(a) Identify the established procedures and requirements for escorting passengers across aerodrome aprons.

(b) Describe the co-ordination required between cabin crew members and ground staff to ensure passenger safety; i.e. stairs in place, props are secured and ways to achieve it.

3.14. Turbulence

3.14.1. Training objective

The cabin crew member will be able to identify the hazards associated with turbulence and the procedures for ensuring passenger and cabin crew safety during periods of in-flight turbulence.

3.14.2. Syllabus

(1) General

(a) Describe turbulence and the classification of turbulence i.e. light, moderate, severe (A.I.P).

(b) List the potential hazards to aircraft, flight crew and passengers in turbulence.

(2) Cabin crew responsibilities

(a) Identify the importance of flight crew communication and flight crew coordination in conditions of turbulence and describe communication and coordination procedures.

(b) Describe safety advice to passengers during turbulence.

(c) Outline the cabin crew responsibilities to ensure that passengers comply with requirements and procedures.

3.15. Flight crew member incapacitation

3.15.1. Training objective

The cabin crew member will be able to identify the procedures for dealing with an incapacitated flight crew member.

3.15.2. Syllabus

(1) General

(a) Define what is meant by incapacitated flight crew member and identify possible causes, i.e. illness, injury, death, physical and mental incapacitation, food poisoning.

(b) Identify the impact on flight safety of an incapacitated pilot or cabin crew member on different aircraft types in the fleet.

(c) Identify the preferred locations for relocating incapacitated flight crew members on different aircraft in the operator's fleet.

(d) Identify how and where to secure an incapacitated flight crew member for landing or during periods of in-flight turbulence.

(e) Identify the flight crew communication procedures to advise of flight crew member incapacitation including flight deck/cabin, senior cabin crew member/other flight crew members.

(2) Pilot incapacitation

(a) Identify the assistance cabin crew members will be required to provide in the flight deck.

(b) Describe the procedures for assisting an incapacitated pilot.

(c) Describe and demonstrate the procedures for administering first aid oxygen to an incapacitated pilot.

(d) Describe the procedures for removing an incapacitated pilot from the flight deck.

(3) Cabin crew incapacitation

(a) Identify the cabin crew co-ordination procedures to ensure that the safety and emergency duties of the incapacitated cabin crew member are assumed; who is responsible for this decision.

(b) Outline the procedures associated with incapacitated cabin crew members, including procedures for dealing with more than one incapacitated cabin crew member.

3.16. Post-flight duties

3.16.1. Training objective

The cabin crew member will be able to identify their post-flight safety related duties.

3.16.2. Syllabus

(1) Communication

In instances of a flight crew change, identify the responsibility of the flight crew to brief the new cabin crew regarding any unserviceabilities, special passengers, any other safety related matters pertinent to their flight.

4. Emergency procedures

4.1. Smoke/fumes in the cabin

4.1.1. Training objective

The cabin crew member will be able to identify the hazards associated with fumes and/or smoke in the cabin, potential sources and the established procedures if fumes and/or smoke are detected in the cabin in flight or on the ground.

4.1.2. Syllabus

(1) General

Identify the possible sources of fumes and smoke in the cabin.

(2) Flight crew responsibilities

(a) List the flight crew communication procedures associated with smoke/fumes in the cabin including how to notify the pilot-in-command of the situation and what information is required.

(b) Describe the procedures for dealing with smoke/fumes in the cabin including locating the source, notifying the pilot-in-command, flight crew co-ordination, ensuring passengers' breathing comfort, preparation for rapid disembarkation or evacuation.

(c) Describe the authority of the pilot-in-command to relocate passengers if smoke/fumes are present in the cabin and when this decision may be made.

4.2. Rapid decompressions and decompression problems

4.2.1. Training objective

The cabin crew member will be able to recognise the types of decompressions, cabin crew responsibilities and the established procedures for dealing with decompressions.

4.2.2. Syllabus

(1) Cabin crew responsibilities

(a) Describe the flight crew and passenger communication procedures for each type of decompression.

(b) Identify the immediate actions cabin crew members must take in the event of decompression.

(c) Describe the flight crew communication procedures, i.e. signal for beginning a post-decompression walkaround, who is responsible for giving this signal and when it will be given.

(d) List the cabin flight crew member duties in a post-decompression walkaround and safety priorities.

(e) Identify the importance of flight crew coordination including passenger relocation during decompressions and methods of achieving this coordination.

4.3. Evacuations

4.3.1. Training objective

The cabin crew member will be able to identify the types of evacuations, cabin crew responsibilities and procedures relating to the different types of evacuation situations.

4.3.2. Syllabus

(1) General

(a) Identify the types of occurrences which may require evacuation or rapid disembarkation, who is responsible for this decision and the factors to be considered when making this decision.

(b) Describe the operator's experience with accidents/incidents involving rapid disembarkment and evacuation.

(c) Outline factors affecting survivability in evacuation such as fuselage break-up, smoke, fire, etc.

(d) Describe the flotation characteristics of aircraft in the fleet. Identify the factors which could adversely affect aircraft flotation in water

landings; i.e. structural damage, weight, centre of gravity, outside conditions.

(e) Describe the different attitudes possible as a result of accidents/incidents; i.e. gear collapse, off-runway, shift in centre of gravity. Include the effect of different aircraft attitudes on exit usability.

(f) Describe the effect of environmental conditions in evacuations, i.e. strong winds, terrain, snow/ice.

(g) Identify the importance of time in evacuations and how time affects survivability in different accident situations.

(h) Describe the type of assistance which may be available at the various aerodromes in the operator's route system. Include ways cabin crew members can manage the evacuation to coordinate their actions with the ground rescue personnel.

(2) Cabin crew responsibilities

(a) Identify the responsibility of cabin crew members to assist passengers and fellow flight crew members in an evacuation and any limitation to this responsibility. Outline the conditions when cabin crew members should evacuate themselves.

(b) Describe ways to assist incapacitated passengers and fellow flight crew members in evacuations.

(c) Describe the importance of flight crew communication in an evacuation and the established communication signals for evacuations. Include who is responsible for activating evacuation signals.

(d) Identify when cabin crew members have the authority and the responsibility to initiate an evacuation.

(e) Identify the briefings required between flight deck crew, cabin crew and passengers in an emergency situation which may require an evacuation. Include the following information in the description -

(i) who is responsible to conduct briefing;

(ii) when and where to conduct the briefing;

(iii) what information is required; and

(iv) how to conduct the briefing including time management.

(f) Describe the different types of passenger behaviour (passive, aggressive and hysteric) and identify effective ways of managing passenger behaviour in evacuations.

(g) Identify the responsibility of cabin crew members to provide leadership in an evacuation and list ways this may be achieved.

(h) Define an Able-Bodied-Person (ABP). Describe the types of persons a cabin crew member would choose for an ABP, the assistance they could provide and the special briefing instructions.

(i) Identify the responsibility of cabin crew members to assess conditions prior to opening any exit.

(3) Evacuation procedures

(a) Describe the established evacuation procedures for each of the following types of evacuation -

(i) land evacuation - prepared and unprepared;

(ii) ditching;

(iii) inadvertent water landing;

(iv) evacuation with PTV mated to aircraft; and

(v) evacuation at an aerodrome gate jetway.

(b) Define brace position. Describe the effect of seat pitch on preferred brace positions. Identify the brace positions for cabin crew members in forward or aft-facing seats, passengers (seat orientation as appropriate), including pregnant passengers, disabled passengers and children and infants. Describe the effectiveness of each brace position and the importance of assuming the preferred brace position to minimise injury.

(c) Identify the signal for assuming the brace position in different evacuation situations, when it is given, who is responsible for giving it and the cabin crew responsibilities when the brace signal has been given. Identify when cabin crew members should assume the brace position if no signal has been given.

(d) Identify the shouted commands for each type of evacuation and describe the rationale behind each of the commands. Describe ways to increase the effectiveness of commands; i.e. voice tone, pace, volume, diction, body language, phraseology (commands in unison).

(e) Identify the evacuation procedures for each type of exit; i.e. doors, windows, hatches, ventral exits, tailcones.

(f) Describe the procedures for using evacuation aids; i.e. slides, ramps, ropes or any other evacuation aid that is provided on the operator's

aircraft. Include instructions on operation, use and instructions to passengers for using these.

(g) Identify the inflation times for the different evacuation aids; i.e. slides, ramps, slide/rafts. Describe how to recognise if an evacuation device is fully inflated.

(h) Describe alternate procedures if initial inflation fails and if the inflation fails during the course of the evacuation.

(i) Describe the preferred techniques for special attention passengers using evacuation slides; i.e. elderly, disabled passengers with guide animals.

(j) Identify how cabin crew members can manage evacuations in adverse conditions; i.e. heavy smoke, darkness.

(k) Identify the importance of checking the cabin; flight deck and lavatories after all passengers have been evacuated and describe how and under what conditions this should be accomplished.

(l) Identify the cabin crew responsibilities for removal of equipment when they evacuate the aircraft and under what conditions this should be accomplished.

(4) Post-evacuation

(a) Describe the responsibilities of cabin crew members after an evacuation; i.e. grouping passengers, assisting with first aid.

(b) Identify the importance of post-crash procedures to increase survivability in each of the survival situations. Include the following -

(i) first aid;

(ii) survival priorities;

(iii) hazards inherent in different environments;

(iv) survival skills for different environments based on aircraft and equipment and supplies carried;

(v) survival equipment; and

(vi) signalling and recovery techniques.

(c) Identify the on board equipment and supplies which cabin crew members could remove from an aircraft after an evacuation that would enhance survivability.

(d) Describe the process of accident investigation and describe the official groups tasked with accident investigation, internationally and nationally. Identify their mandate and their role in aviation safety.

(5) Accident/Incident review

(a) Describe the operator's accidents/ incidents and accidents of other operators.

(b) List the factors which had a positive and a negative effect on survivability.

Note - *It is acceptable to use the accident/incident data from other operators when teaching points can be universally applied*.

5. Equipment overview

5.1. Training objective

The cabin crew member will be able to identify the location of each piece of safety and emergency equipment on board the operator's aircraft.

5.2. Syllabus

(1) General

(a) Review the location of each piece of safety and emergency equipment the operator has available on board each aircraft.

(b) Describe each piece of safety and emergency equipment the operator has available on board each aircraft on the following points -

(i) general description;

(ii) uses;

(iii) locations;

(iv) pre-flight serviceability check;

(v) removal from storage;

(vi) how to operate;

(vii) conditions for operation;

(viii) operational limitations;

(ix) operation under adverse conditions;

(x) precautions for use; and

(xi) care after use.

6. Aircraft specific

6.1. Galleys

6.1.1. Training objectives

The cabin crew member will be able to identify the procedures relating to the use of galleys.

6.1.2. Syllabus

(1) General*

(a) Identify the cabin crew procedures for dealing with any electrical malfunctions in the galley.

(b) Where galleys are located on the lower deck, include the following -

(i) policies and procedures relating to lower deck galleys;

(ii) maximum number of persons allowed in the lower deck galley;

(iii) communication procedures with lower galley cabin crew member; and

(iv) escape routes from the lower deck galley.

(c) Identify the procedures relating to lifts; i.e. cart-lifts/dumb waiter, how and when they are to be operated, safety features, alternate procedures if lift becomes unserviceable.

6.2. Lighting system

6.2.1. Training objective

The cabin crew member will be able to identify the different components of the interior and exterior lighting systems and be able to use them effectively in any situation.

6.2.2. Syllabus

(1) General

(a) Identify the responsibilities for activating components of the lighting system in normal and emergency situations.

(b) Describe the alternate procedures for use in case of system failure.

6.3. Water and waste systems

6.3.1. Training objective

The cabin crew member will be able to implement the correct procedures relating to these systems.

6.3.2. Syllabus

(1) General

(a) Describe the cabin crew responsibilities for the operation/malfunctions of the water and waste system.

(b) Describe the shut-off valves, importance, location, operation and identification.

6.4. Oxygen systems

6.4.1. Training objective

The cabin crew member will be able to recognise the components of the fixed oxygen systems and be able to use the systems effectively in any on board situation.

6.4.2. Syllabus

(1) General

(a) Describe the components of the oxygen system on board the aircraft, including flight deck, cabin sources and galleys.

(b) Describe when each of the oxygen system components is used. Include description of use for first aid, decompression and supplemental purposes.

(c) Identify the location of the components of the oxygen system including the location of O^2 masks and spares.

(d) Identify alternate procedures to access oxygen mask when the system fails.

(e) Describe the flight crew communication procedures required to activate the oxygen system.

6.5. Heating and ventilation systems

6.5.1. Training objective

The cabin crew member will be able to identify the components of the heating and ventilation systems and be able to implement correct procedures relating to these systems.

6.5.2. Syllabus

(1) General

(a) Identify the location of the heating and exhaust vents which cabin crew members need to be aware of.

(b) Describe any flight crew communication and flight crew coordination procedures when using the heating and ventilation system.

(c) Identify conditions that may occur in the cabin associated with the system; i.e. condensation, glycol fumes and residual oil smoke.

6.6. Exits

6.6.1. Training objective

The cabin crew member will be able to identify the features of different types of exits and be able to effectively use them in any on board situation.

6.6.2. Syllabus

(1) General

(a) Identify safety precautions associated with exit operation. Include potential hazards, e.g. inadvertent slide deployment, injury to flight crew and ground personnel, etc.

(b) Identify the MEL relief given to operators when a door or slide is inoperative. Outline the conditions for this relief to be granted and the procedures which must be followed.

(2) Normal operation

(a) Describe the flight crew communication and co-ordination procedures, including any established signals associated with exit operation in normal situations. Identify who is responsible for ensuring that this communication occurs and the importance of this communication for flight safety.

(3) Abnormal operation (non-routine)

(a) Describe the procedures for abnormal/non-routine operation of this exit, including who is responsible for the exit operation, flight crew communication and flight crew coordination procedures.

(b) Identify any precautions for abnormal/non-routine operation of this exit.

(4) Emergency operation

(a) Identify the visual indicators that verify the off-wing slide, ramp is inflated.

(b) Describe the procedures for operating the airstairs in normal, abnormal and emergency situations. Identify the cabin crew member responsibility for airstair operation.

(c) Describe the flight crew communication and the coordination procedures whenever the airstairs are being used.

6.7. Unique features

6.7.1. Training objective

The cabin crew member will be able to recognise the unique features of this aircraft type or differences within the type as a result of interior configuration or manufacturer series differences.

6.7.2. Syllabus

(1) General

(a) Identify any features, procedures and/or equipment unique or different to each aircraft in the operator's fleet; e.g. electrical outlets, main deck cargo compartment fire/smoke detection systems.

(b) Describe each of the differences, their impact on the operator's standard operating procedures and the importance to flight safety of cabin crew members being familiar with them.

7. Drills

7.1. Passenger briefing drills

7.1.1. Equipment criteria

Demonstration equipment representative of all of the equipment used on the aircraft in the operator's fleet.

7.1.2. Performance criteria

Each cabin crew member will perform each of the following:

(a) Pre-flight safety briefing to a special attention passenger (i.e. blind, physically disabled, unaccompanied minor).

7.1.3. Evaluation criteria

Cabin crew member performance will be observed, rated and debriefed according to -

(a) completeness of briefing content (i.e. all relevant points included);

(b) effective usage of communication techniques (i.e. clarity, comprehension, absence of jargon;

(c) correctly modified in accordance with requirements of the individual to whom briefing is being delivered;

(d) proper usage of eye contact body language;

(e) displays confidence and leadership;

(f) displays openness and ability to answer questions; and

(g) verifies that briefing points were understood.

7.2. Aircraft operation drills for each aircraft type

7.2.1. Equipment criteria

(1) Each drill will be performed using the appropriate aircraft or an approved training device.

(2) Individual aircraft exits may be substituted by an approved equivalent and as authorised in the training programme. Exits equipped with slides must include slide attached or slide drag simulation for emergency mode operations.

(3) Floor level exits for which operations are identical under both normal and emergency conditions and which are a routine cabin crew member responsibility to open under normal conditions may be excluded from the drills specified under section 7.2.2.

7.2.2. Performance criteria

(1) Each cabin crew member will operate each floor level exit type, for each aircraft type in the emergency mode that was not operated in the conduct of the drills required in section 7.3.3 and perform the following -

(a) recognise the signal for and/or the conditions under which the exit is to be opened in the emergency mode;

(b) verify the exit is in the correct mode;

(c) assess conditions outside the exit to determine exit usability; i.e. clear of obstruction, fire, aircraft attitude;

(d) position escape device;

(e) open the exit in the emergency mode;

(f) secure exit in the fully open position;

(g) simulate pulling of the manual inflation handle(s) and verify deployment inflation of ramp, slide;

(h) assume and maintain appropriate protective body and hand positions; and

(i) physically identify release handle(s) (i.e. slide disconnect, ventral stairs, etc.).

(2) Each cabin crew member will operate each cabin window or hatch exit type for each aircraft type that was not operated in the drills required in section 7.3.3 and perform the following -

(a) recognise the signal for and/or the conditions under which the exit is to be opened;

(b) assess conditions outside the exit to determine exit usability; i.e. clear of obstruction, fire, aircraft attitude;

(c) open and correctly stow the exit;

(d) verbally describe correct exit placement following removal, if the training procedure differs from the operational procedure;

(e) simulate pulling of the manual inflation handle(s) and verify deployment, inflation of ramp, slide;

(f) assume and maintain appropriate protective body and hand positions;

(g) physically identify location of the escape tapes or escape ropes; and

(h) physically identify release handle(s); i.e. slide disconnect, tailcone jettison, etc.

7.2.3. Evaluation criteria

Cabin crew member performance will be observed, rated and debriefed according to the following -

(a) acknowledgment and timely responses to signals;

(b) assessment of the conditions outside the exit to determine exit usability; i.e. clear of obstruction, fire, aircraft attitude;

(c) correct usage of exit operating mechanisms including hand and body position;

(d) usage of proper terminologies and procedures;

(e) correctly positions escape device;

(f) secures exit in the fully opened position or ensures correct stowage position of exit door, window or hatch;

(g) simulates the pulling of the manual inflation handle(s) and verifies deployment and inflation of evacuation slide/ramp;

(h) assumes and maintains appropriate protective hand and body positions;

(i) correctly identifies release handle(s); i.e. slide disconnect, tailcone jettison, ventral stairs; and

(j) correctly applies procedures (i.e. positioning of seatbacks, armrest, tray tables).

7.3. Evacuation drills

7.3.1. General

(1) Evacuations are emergency situations which cabin crew members must effectively manage using their knowledge of procedures and the resources available to them. Skills are developed and maintained through practice.

(2) It is recognised that on aircraft with more than one cabin crew member, an evacuation will likely involve multiple exits and cabin crew members. Therefore, where a drill is performed on an aircraft with more than one cabin crew member, the drill scenario will involve a "typical" number of cabin crew members. Where a cabin simulator is used to conduct the drills, the number of cabin crew members who could participate at any time, will be appropriate to the cabin simulator configuration.

(3) Each participant will perform the designated evacuation responsibilities for the assigned position. Where a double cabin crew member seat is available and would normally be occupied by two cabin crew members, the drill will be conducted to reflect this reality.

(4) A cabin crew member who is qualified exclusively on aircraft operating with one cabin crew member and who is being qualified on aircraft with more than one cabin crew member, must perform at least one drill with additional cabin crew members.

7.3.2. Simulation scenarios

(1) An evacuation drill is a training and evaluation scenario which must portray an operational flight and include abnormal and emergency occurrences and interaction amongst cabin crew members (if applicable), other cabin crew members and passengers.

(2) A drill scenario should not incorporate excessive or multiple unrelated variables that would overload a cabin crew member nor should it be limited so that there is reduced value to the exercise. The variables should differ in sequence from one drill to the next and can include, but are not limited to, the following -

(a) unserviceable exits;

(b) inflation devices that fail or only partially inflate;

(c) aircraft attitude which will necessitate a decision to use the exit or redirect passengers;

(d) poor visibility; i.e. darkness, smoke;

(e) incapacitated flight crew members;

(f) exits which become unusable during the evacuation;

(g) special needs passengers; i.e. elderly, disabled;

(h) passengers in panic; i.e. positive, negative, false leadership;

(i) failure of aircraft emergency systems; i.e. lighting, evacuation signal, communication;

(j) decompression; and

(k) exits which require the use of non-standard "commands"; i.e. ramp with slide.

7.3.3. Unprepared land and unprepared water evacuation drill performance criteria

Each cabin crew member will perform at least one land or one unprepared water evacuation drill that incorporates the procedures pertinent to a specific exit and perform the following -

(a) secure themselves in a cabin crew member seat;

(b) recognise that an emergency situation is developing and react appropriately to the drill scenario;

(c) apply all applicable commands;

(d) recognise when and how to initiate the evacuation; i.e. commands, evacuation horn;

(e) activate emergency lights, evacuation horn if applicable;

(f) locate and don life jacket and command passengers as appropriate;

(g) assess conditions inside and outside the exit to determine exit usability throughout the evacuation;

(h) prepare and open the exit;

(i) secure exit in fully open position or ensure correct stowage;

(j) pull the manual inflation handle(s) and verify deployment, inflation of ramp, slide (simulated);

(k) assume appropriate protective position;

(l) initiate passenger evacuation;

(m) final cabin and flight deck checks and remove required emergency equipment;

(n) evacuate aircraft/simulator correctly;

(o) physically identify location of escape tapes or escape ropes, if applicable; and

(p) physically identify release handle(s); i.e. slide disconnect, ventral stairs, tailcone jettison, etc.

7.3.4. Evaluation criteria

Cabin crew member performance will be observed, rated and debriefed according to the following -

(a) correct usage of the seat mechanism, restraint system and brace position as appropriate for seat direction and location;

(b) correct and timely reaction to emergency situations;

(c) consistent usage of appropriate terminologies; i.e. commands, ABP briefings, with clear, positive authoritative communication techniques, as appropriate for drill scenario;

(d) activates emergency lights, evacuation horn, if applicable (simulated);

(e) selects appropriate exit for the evacuation scenario and the aircraft type;

(f) assessment of the conditions inside and outside the exit to determine exit usability throughout evacuation; i.e. clear of obstruction, fire, aircraft attitude;

(g) preparation and correct operation of exit;

(h) secures exit in the fully open position or ensures correct stowage;

(i) pulls inflation handle(s) and verifies deployment, inflation of slide/ramp (simulated);

(j) assumes and maintains appropriate protective body and hand positions;

(k) effective usage of able-bodied persons for special needs passengers; i.e. assisting outside aircraft and directing people away from the aircraft or onto flotation devices, crowd control, etc.;

(l) adequacy of cabin checks, removal of equipment and additional supplies as scenario and operator procedures dictate;

(m) correctly identifies release handle(s); i.e. slide disconnect, tailcone jettison, ventral stairs;

(n) correct application of procedures as related to scenario; and

(o) consequences of errors.

7.3.5. Crew prepared evacuation drill performance criteria

Each cabin crew member must participate in at least one prepared land evacuation drill or at least one ditching evacuation drill and perform the following -

(a) recognise the in-flight emergency signal from the flight deck and react according to procedures;

(b) prepare passengers, cabin and self-according to procedures and scenario;

(c) select and brief able-bodied passengers to assist as required, opening non-crewed exits, crowd control, buddy-up with special needs passengers, assisting outside aircraft and directing people away from the aircraft or onto flotation devices;

(d) recognise the emergency brace and evacuation signals and react accordingly;

(e) activate emergency lights, evacuation horn if applicable (simulated);

(f) prepare and operate exits;

(g) evacuate passengers;

(h) final cabin and flight deck checks, remove required emergency equipment; and

(i) evacuate aircraft/simulator.

7.3.6. Evaluation criteria

Cabin crew member performance will be observed, rated and debriefed according to the contents of section 7.3.4 and the following -

(a) correct application of emergency landing preparation procedures;

(b) awareness of and appropriate response to passenger behaviour;

(c) communication acknowledgement;

(d) accuracy in briefing of ABPs;

(e) debrief will include a discussion with all participants describing, in general terms, procedures and responsibilities which must be completed following and as appropriate to evacuation scenarios; i.e. flotation devices, equipment, location, movement of passengers to a safe area, protection from the elements, first aid, etc.

7.4. Life raft drill*

7.4.1. Equipment criteria

Life raft drill must be conducted using life-saving equipment that is representative of that which is installed on each aircraft type with respect to weight, dimensions, appearance, features and operation.

7.4.2. Performance criteria

(1) Each cabin crew member will participate in a life raft drill once every third training year in water and perform the following -

(a) access the raft compartment and experience the difficulty associated with moving the weight of a packaged life raft within a space representative of the aircraft aisle;

(b) identify all features of a fully inflated raft;

(c) board raft(s), assist persons into raft;

(d) access the inflation lanyard;

(e) access the slide, raft quick release mechanism while verbally describing the procedure to release the life raft from the aircraft; and

(f) identify and examine the life raft survival kit and components.

(2) Each cabin crew member will participate as a cabin crew member or a passenger in the following -

(a) launching, inflating, and disconnecting raft(s) either actual or by video;

(b) observe the righting of an overturned raft, or view audio visual material;

(c) effective raft management; i.e. distribution of passengers, deploying sea anchor, etc.;

(d) erecting the raft canopy;

(e) distribution of duties to passengers;

(f) discuss the hazards associated with moving a packaged life raft through the cabin to an exit; i.e. inadvertent inflation, passenger movement and panic; and

(g) water survival principles, a review of the operations of survival kit components including raft maintenance.

7.5. Life jacket drill

7.5.1. Equipment criteria

Life jackets used for this drill must be representative of those most commonly carried on the aircraft.

7.5.2. Performance criteria

(1) Each cabin crew member must perform the following -

(a) observe removal of life jacket from closed pouch;

(b) don life jacket;

(c) locate and review operation of inflation toggles;

(d) partially inflate one chamber of life vest orally;

(e) practice deflation technique;

(f) locate and review light activation;

(g) locate whistle, if applicable; and

(h) fit a life jacket.

(2) Each cabin crew member shall, every third year, in addition to performance criteria 7.4.2 and 7.5.2 perform the following at a facility approved by the Executive Director -

(a) water entry;

(b) assume and maintain a heat escape lessening position for a period of at least ten (10) seconds each and assume the group huddle (minimum of two crew members);

(c) move in one direction unaided and without touching the sides of the pool for a minimum distance of 15m;

(d) board raft(s), assist persons into raft; and

(e) demonstrate knowledge and use of raft survival and other equipment, including erecting the canopy.

7.6. Aircraft slide drill

7.6.1. Equipment criteria

(1) The evacuation slide must be representative of the type installed in the aircraft with respect to the following categories -

(a) inflatable, double lane slides;

(b) inflatable slide and ramp combination; and

(c) inflatable, single lane slides.

(2) Non-inflatable slides must be representative of the type installed in the aircraft.

7.6.2. Performance criteria

Each cabin crew member will perform an aircraft slide drill annually according to the following-

(1) inflatable evacuation slide -

(a) slide down an inflatable slide; or

(b) slide down an inflatable slide from one of the categories, and for each other slide category, view a video which depicts slide, ramp activation and inflation, both externally from a side angle and a slide base angle and internally from the cabin crew member protected position, including slide inflation sound, and slide disconnect sequence; or

(2) Non-inflatable evacuation slide

Where the evacuation slide is not door mounted, each cabin crew member must retrieve the slide(s) from its stowed location and attach the evacuation slide clips to the appropriate attachment on door frames.

7.7. Firefighting drills

7.7.1. General

(1) Drill scenarios will provide each cabin crew member with the opportunity to merge procedural knowledge with practical skills. Their ability to successfully react to different fire situations will enhance their level of confidence and their ability to deal with fires in flight.

(2) Simulated cabin firefighting drills shall include class A, B or C fires in a minimum of one of the following locations -

(a) cabin area (i.e. under seat, over-head bin, closet);

(b) galley area (i.e. garbage bin, upper electrical panel, oven);

(c) confined area (i.e. waste bin, lavatory); and

(d) hidden (i.e. behind panels).

7.7.2. Firefighting syllabus

The cabin crew member will be able to identify the types of fire, fire detection and firefighting systems and the established firefighting procedures.

(1) General

(a) Identify hazards associated with on board fires including toxicity of fumes, flammability of cabin materials, and variety of materials to burn.

(b) Identify the impediments to firefighting on board the aircraft, including limited visibility due to smoke/fumes, firefighting in confined space, difficulty in locating the source of the fire, limited resources to fight the fire and distance to suitable aerodrome for landing.

(c) Describe experience with fire accidents/incidents. Identify the safety lessons learned as a result.

(d) Define fire chemistry including the elements which must be present for fire to occur; i.e. fuel, heat, oxygen, chemical reaction.

(e) List the classes of fire which may occur on aircraft Class A - combustible material fires; Class B - grease/spill fires; Class C - electrical and Class D - fire involving metals and the possible sources for these fires.

(f) Describe importance of early detection and correct recognition.

(g) Identify the characteristics and behaviour of fire; i.e. what you will see, how the fire will behave, in different cabin environments, fire-propagation.

(h) Describe the means of fire smoke detection; i.e. smell, auditory, visual, touch, tactile.

(i) Describe the chemical properties of each type of fire extinguisher including hazards to occupants and aircraft systems, how it extinguishes fire.

(2) Cabin crew responsibilities

(a) List fire prevention measures and cabin crew responsibilities for fire prevention including but not limited to-

(i) practising and maintaining safe work habits;

(ii) enforcing smoking regulations;

(iii) monitoring cabin, toilets, cargo compartments;

(iv) awareness of popped circuit breaker procedures; and

(v) prompt investigation of fire detection alarms, unusual odours, heat build-up, deformation of aircraft components, etc.

(b) Describe the importance of cabin crew co-ordination in firefighting and identify ways that this may be achieved.

(c) Describe the importance of flight cabin crew communication in firefighting and providing pilot-in-command with accurate information on fire source, location, extent/severity of fire/smoke, firefighting actions.

(3) Procedures - cabin

(a) Describe the firefighting procedures for specific types of fires; e.g. galley, oven, lavatory, electrical, upholstery, etc.

(b) Describe the technique and procedures for fighting these fires including finding the source of the fire, type of extinguisher to use, additional firefighting equipment needed, technique for using extinguisher, complications to fighting this type of fire, limitations to fighting this type of fire, post-fire procedures, flight crew communication and flight crew co-ordination procedures, passenger-handling.

(c) Identify ways to maintain breathing comfort for cabin occupants.

(d) Define "smoke removal", and smoke control, and describe the associated procedures on the different types of aircraft including flight crew communication, flight crew coordination and advice to passengers.

Note - *May be in the aircraft type specific*.

(e) Define flashover and flash-fire. Describe the cause of each and conditions under which each is likely to occur.

(4) Procedures - external

(a) Identify the types of external fires which could affect flight safety included but not limited to -

(i) engine fires;

(ii) APU and engine torching;

(iii) fuel spill/apron fires;

(iv) fires on loading bridges; and

(v) service vehicle fires.

(b) Describe established procedures for dealing with these fire situations including recognition, flight crew communication and flight crew coordination.

(c) Identify the communication and coordination required with ground personnel and describe the firefighting assistance ground personnel

can offer and the assistance cabin crew members can provide to ground personnel.

7.7.3. Equipment criteria

(1) Firefighting drills will be conducted using furnishings representative of those found on the operator's aircraft as appropriate to the drill scenario (i.e. such as seats, galley units, panels, waste bins, etc.).

(2) Firefighting equipment and the brackets used for restraint must be representative to those installed in the aircraft with respect to weight, dimensions, controls, types and operations. Fire extinguishers used for live firefighting must be charged with the appropriate agent or with an environmentally friendly agent. Protective Breathing Equipment (PBE) consisting of portable oxygen bottle and full face mask must be charged with oxygen. Self-contained PBE may be substituted with a training smoke hood which is not operational.

7.7.4. Equipment practice

Each cabin crew member must demonstrate the ability to use firefighting equipment and perform the following -

(1) remove from stowage, don and activate PBE and practice communication;

(2) remove from stowage and operate each type of fire extinguisher (uncharged) and associated attachments (i.e. extinguisher fitted with hose attachment, extension (wand), etc.);

(3) don each piece of protective clothing; and

(4) initiate firefighting procedures involving at least one cabin crew member and a passenger(s).

7.7.5. Live fire fighting

(1) Each cabin crew member must demonstrate the effectiveness of a fire extinguisher correctly applied to extinguish an actual fire once every third annual training year.

(2) Each cabin crew member shall (following equipment practice 7.7.4) demonstrate his/her ability to extinguish a live cabin fire in at least two of the following areas -

(a) cabin area (i.e. under seat, over-head bin, closet);

(b) galley area (i.e. garbage bin, upper electrical panel, oven);

(c) confined area (i.e. waste bin, lavatory); and

(d) hidden (i.e. behind panels).

7.7.6. Evaluation criteria

Cabin crew member performance will be observed, rated and debriefed according to the following -

(a) recognition or identification of the problem;

(b) locates the source of the fire; i.e. tactile search, use of crash axe, etc.;

(c) effective communication/coordination procedures throughout the drill; i.e. notifying fellow flight crew members of the situation, providing clear, concise and consistent information to the pilot-in-command, advice and assistance to passengers;

(d) response in a timely manner;

(e) correct use of firefighting equipment consistent with the type of fire, location of the fire and maximum effective position of the fire extinguisher;

(f) undertake further action as required; and

(g) consequences of error.

7.8. Pilot incapacitation drill

7.8.1. Training objective

The cabin crew member will apply the procedures relating to an incapacitated pilot.

7.8.2. Syllabus

For each aircraft where the operation of the pilot seats is significantly different, each cabin crew member shall -

(a) pull the pilot away from the flight controls and correctly fasten and lock the restraint system;

(b) position the pilot seat using the controls, i.e. horizontal, vertical, recline; and

(c) apply flight crew coordination and communication procedures to assist the remaining flight deck crew.

121.03.9 REFRESHER AND REQUALIFICATION TRAINING

Note - *See Table 1 following this TS for training requirements for all phases of training*.

1. Refresher training

(1) A cabin crew member who has been absent from flying duties for more than six months up to and including twelve months on a particular type of aeroplane on which that person is qualified, shall be given training prior to operating on such type of aeroplane that includes at least the subjects listed below -

(a) a briefing on changes to company procedures since the person was last involved in flying operations;

(b) a review of aircraft systems, equipment and procedures for each aeroplane on which the person is to operate;

(c) the operation and actual opening of all normal and emergency exits for passenger evacuation in an aeroplane or approved representative training device;

(d) demonstration of the operation of all other exits; and

(e) any other information deemed necessary by the Executive Director.

(2) The operator shall ensure that refresher training is conducted by NCAA approved instructors or designated examiners (DEs).

2. Requalification training

(1) An operator shall ensure that requalification training is conducted by NCAA approved instructors or DEs.

(2) A cabin crew member who has been absent from flying duties for more than twelve months up to and including thirty-six months shall undergo recurrent training as prescribed in this technical standard, at least two familiarisation sectors during commercial operations.

(3) A cabin crew member who has been absent from flying duties for more than thirty-six months shall complete initial training as prescribed in Document NAM-CATS 64 and type training as appropriate.

Table 1: Cabin crew training syllabus

	Company Induction	Initial Aeroplane Type	Recurrent	Requalification	Refresher
OPERATOR SPECIFIC					
Structure	.				
History	.				
Vision and Mission	.				
AVIATION - GENERAL					
REGULATORY OVERVIEW					
Regulatory overview					
Legislation			.	.	
AVIATION TERMINOLOGY					
Terminology					
Terms of reference					
THEORY OF FLIGHT					

General aircraft description					
Aerodynamics of flight					
Meteorology					
Air traffic control					
PHYSIOLOGY OF FLIGHT					
General			.	.	
Effects of altitude			.	.	
FLIGHT DECK OBSERVATION FLIGHT					
General		.	.	.	
ROLES AND RESPONSIBILITIES					
OPERATOR					
Operating requirements		.		.	.
Operations manual		.	.	.	.
CABIN CREW MEMBERS					
General		.	.	.	.
CAA INSPECTORS					
General		.	.	.	.
SAFETY PROCEDURES					
FLIGHT CREW CO-ORDINATION					
General		.	.	.	.
Flight crew co-ordination		.	.	.	.
COMMUNICATIONS					
General		.	.	.	.
Communication		.	.	.	.
Passenger announcements		.			
SURFACE CONTAMINATION					
General		.	.	.	.
Cabin crew member responsibilities		.	.	.	.
De-icing/anti-icing		.	.		
BRIEFINGS					
Cabin crew briefings		.	.	.	.
Passenger briefings		.	.	.	.
SAFETY CHECKS					
General		.	.	.	.
PASSENGER HANDLING					
General		.	.	.	
Passenger boarding		.	.	.	.
PASSENGER AND CABIN CREW MEMBER SEATS AND RESTRAINTS					
Passenger seating		.	.	.	.
Cabin crew seating		.	.	.	.
CABIN BAGGAGE					
Passenger carry-on baggage	.	.	.	.	.
Flight crew carry-on baggage	.	.	.	.	.
ELECTRONIC DEVICES					

General		.	.	.	.
SERVICE TO PASSENGERS ON THE GROUND					
General		.			
Cabin crew member responsibilities		.	.	.	.
FUELLING WITH PASSENGERS ON BOARD					
General		.	.	.	.
Cabin crew member responsibilities		.	.	.	.
PRE-TAKE OFF AND PRE-LANDING					
Cabin preparation		.	.	.	.
Cabin crew member responsibilities		.	.	.	.
Abnormal situations		.	.		
PROPELLER ABNORMALITIES					
General		.	.	.	
TURBULENCE					
General		.	.	.	.
Cabin crew member responsibilities		.	.	.	.
CREW MEMBER INCAPACITATION					
General		.	.	.	.
Pilot incapacitation		.	.	.	.
Cabin crew incapacitation		.	.	.	.
FLIGHT DECK PROTOCOL					
General		.		.	
FUEL DUMPING					
General		.		.	
POST-FLIGHT DUTIES					
Documentation		.	.	.	.
Communication		.	.	.	.
OXYGEN ADMINISTRATION					
General		.		.	
Procedures		.		.	
EMERGENCY PROCEDURES					
FIRE FIGHTING					
General		.	.	.	.
Cabin crew member responsibilities		.	.	.	.
Procedures - cabin		.	.	.	.
Procedures - external		.	.	.	.
SMOKE/FUMES IN THE CABIN					
General		.	.	.	.
Cabin crew member responsibilities		.	.	.	.
RAPID DECOMPRESSIONS AND PRESSURISATION PROBLEMS					
General		.	.	.	.
Cabin crew member responsibilities		.	.	.	.
EVACUATIONS					

General		.	.	.	.
Cabin crew member responsibilities		.	.	.	.
Evacuation procedures		.	.	.	.
Post-evacuation		.	.	.	.
Accident/Incident review		.			
EMERGENCY EQUIPMENT					
EQUIPMENT OVERVIEW					
General		.	.	.	.
AEROPLANE SPECIFIC					
PHYSICAL DESCRIPTION					
General		.			
Exterior description		.			
Interior description		.		.	
GALLEYS					
General		.	.	.	
COMMUNICATIONS SYSTEMS					
General		.			
Interphone		.		.	.
Public address system		.		.	.
Passenger call system		.			
Entertainment system		.		.	
Automatic announcement system		.		.	
LIGHTING SYSTEMS					
General		.	.	.	.
WATER AND WASTE SYSTEMS					
General		.	.	.	.
OXYGEN SYSTEMS					
General		.	.	.	.
HEATING AND VENTILATION SYSTEMS					
General		.	.	.	
EXITS					
General		.	.	.	.
Normal operation		.	.	.	.
Abnormal operation		.	.	.	.
Emergency operation		.	.	.	.
Airstairs		.	.	.	.
UNIQUE FEATURES					
General		.	.	.	.
DRILLS					
PUBLIC ADDRESS SYSTEM AND INTERPHONE SYSTEM DRILLS					
Introduction		.		.	
Equipment criteria		.		.	
Performance criteria		.		.	
Evaluation criteria		.		.	
PASSENGER BRIEFING DRILL					

Equipment criteria		.		.	
Performance criteria		.		.	
Evaluation criteria		.		.	
AEROPLANE EXIT OPERATION DRILLS					
Equipment criteria		.	.	.	
Normal door operation performance criteria		.	.	.	
Emergency door operation performance criteria		.	.	.	
Cabin window exit operation		.	.	.	
Evaluation criteria		.	.	.	
Airstair operation performance criteria		.	.	.	
EVACUATION DRILLS					
General		.	.	.	
Simulation scenarios		.	.	.	
Unprepared land/unprepared water evacuation		.	.	.	
Evaluation criteria		.	.	.	
Cabin crew prepared land/ditching evacuation drills		.	.	.	
Evacuation criteria		.	.	.	
RAFT DRILL (WET OR DRY)					
Equipment criteria		.	.	.	
Performance criteria		.	.	.	
LIFE JACKET DRILL					
Equipment criteria		.	.	.	
Performance criteria		.	.	.	
AEROPLANE SLIDE DRILL					
Equipment criteria		.	.	.	
Performance criteria		.	.	.	
FIRE FIGHTING DRILLS					
General		.	.	.	
Equipment criteria		.	.	.	
Equipment practice performance criteria		.	.	.	
Live firefighting performance criteria		.	.	.	
Firefighting/Cabin performance criteria		.	.	.	
Evaluation criteria		.	.	.	
Fires/Class B main deck cargo compartment		.	.	.	
OXYGEN ADMINISTRATION DRILL					
Equipment criteria		.		.	
Portable oxygen bottle performance		.		.	

criteria					
Fixed first aid oxygen performance criteria		.		.	
PRE-FLIGHT CHECK					
Equipment criteria		.	.	.	
Performance criteria		.	.	.	
Evaluation criteria		.	.	.	
PRE-TAKE OFF CHECK					
Equipment criteria		.	.	.	
Performance criteria		.	.	.	
Evaluation criteria		.	.	.	
PRE-LANDING CHECK					
Equipment criteria		.	.	.	
Performance criteria		.	.	.	
Evaluation criteria		.	.	.	
POST-LANDING CHECK					
Equipment criteria		.	.	.	
Performance criteria		.	.	.	
Evaluation criteria		.	.	.	
PILOT INCAPACITATION DRILL					
Procedures		.	.	.	

121.03.10 EMPLOYEES AND SERVICE AGENT TRAINING

A. FLIGHT OPERATIONS OFFICERS AND FLIGHT FOLLOWERS

Notes -

1. *Any reference to "equivalent course of studies" in this TS means that credit may be given for previous training received towards a pilot licence but that additional training may be required.*

2. *For persons without any formal training, credit may be given based on relevant experience but is subject to a knowledge assessment by the NCAA or an NCAA-approved person.*

1. Qualifications of Flight Operations Officer instructors and examiners

(1) An air service operator shall not assign any person to provide and no person shall provide any generic or operator-specific flight operations officer (FOO) training required in terms of Division Four of Subpart 3, unless such person -

(a) has successfully completed a FOO generic course of studies or an acceptable equivalent course of studies and received certification from the approved training organisation having conducted the training; and

(b) has successfully completed the operator-specific FOO training and received a certificate of competency issued by the operator in terms of this technical standard.

(2) An operator shall not assign and no person shall act as a FOO examiner unless such person -

(a) is the holder of a current FOO certificate of competency appropriate to their assigned duties;

(b) has completed the FOO training referred to in sub-paragraph (a) appropriate to their assigned duties; and

(c) has been certified by the operator to act as a FOO examiner for those types of operational control systems and aeroplanes listed in the certification.

2. Qualifications of a Flight Operations Officer

(1) No person may be assigned to FOO duties, except under adequate supervision, unless such person-

(a) in the case of a new hire FOO, has -

(i) completed the generic training outlined in section 3 or an acceptable equivalent course of studies;

(ii) completed the operator-specific training required by section 4; and

(iii) been issued a certification of competence by the operator indicating the operational control system(s) and company aeroplane(s) authorised; or

(b) has undergone the operator's specific FOO training and demonstration of competence within the 12 months preceding such assignment: Provided -

(i) the FOO's training file provides evidence of the completion of the training and demonstration of competence approved by that operator; and

(ii) the FOO has been issued a certification of competence issued by the operator indicating the operational control system/s and company aeroplanes authorised.

(2) Where a FOO has previously undergone the generic training prescribed in section 3, the validity of which has not lapsed, the requirements of paragraph (1)(a)(i) above are deemed to have been met.

(3) No operator shall assign a FOO to duty when such person has not acted in that capacity -

(a) for a period of six months, unless such person has undergone a briefing on changes to procedures or other changes in the operational control system (OCS) that have occurred since the person last served;

(b) for a period of one to two years, unless such person has undergone the recurrent course of studies;

(c) for a period of greater than 2 years, unless such person has undergone the initial course of studies of the company-specific training and has successfully completed the appropriate check; and

(d) for a period of 5 years since completion of the generic operations officer training, unless such person has acted as a FOO for at least 6 months in the preceding 24 months, unless such person -

(i) has undergone refresher training based upon the generic course; and

(ii) has completed the company-specific training and has successfully completed the appropriate check.

3. Flight operations officer generic training

(1) The following subjects form the basis for generic training -

(a) air law - rules and regulations relevant to a FOO, appropriate air traffic services practices and procedures;

(b) aircraft general knowledge -

(i) principles of operation of aeroplane powerplants, systems and instruments;

(ii) operating limitations of aeroplanes and powerplants; and

(iii) minimum equipment list;

(c) flight performance calculation, planning procedures and loading -

(i) effects of loading and mass distribution on aircraft performance and flight characteristics; mass and balance calculations;

(ii) operational flight planning; fuel consumption and endurance calculations; alternate aerodrome selection procedures; en route cruise control; extended range operation;

(iii) preparation and filing of air traffic services flight plans; and

(iv) basic principles of computer-assisted planning systems;

(d) human performance - human performance relevant to dispatch duties;

(e) meteorology -

(i) aeronautical meteorology; the movement of pressure systems; the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en route and landing conditions; and

(ii) interpretation and application of aeronautical meteorological reports, charts and forecasts; codes and abbreviations; use of, and procedures for obtaining, meteorological information;

(f) navigation - principles of air navigation with particular reference to instrument flight;

(g) operational procedures -

(i) use of aeronautical documentation;

(ii) operational procedures for the carriage of freight and dangerous goods;

(iii) procedures relating to aircraft accidents and incidents;

(iv) emergency in-flight procedures; and

(v) procedures relating to unlawful interference and sabotage of aircraft;

(h) principles of flight - principles of flight relating to the appropriate category of aircraft; and

(i) radio communication - procedures for communicating with aircraft and relevant ground stations.

(2) Practical Training.

The applicant shall have served under the supervision of a FOO or, in the case of an operator having only one FOO, a suitably qualified person designated by the person responsible for flight operations or approved by the Executive Director, for at least 90 working days within the six months immediately preceding the application.

4. Operator-specific flight operations officer and flight follower training - general

(1) The operator shall establish and maintain approved ground training programmes for FOOs and flight followers in its employ whether on a full-time or part-time basis or are otherwise engaged under the provisions of contractual services approved by the Executive Director for that operator.

(2) Each training programme shall be published in the operations manual.

(3) Each training curriculum shall be appropriate to the employee's duties and in consideration of the type and complexity of the OCS approved for the operator.

(4) Each FOO or flight follower trainee shall receive operator-specific training as outlined in the applicable curriculum.

5. Flight operations officer training

The operator-specific FOO training programme shall be published as individual syllabi in terms of initial, recurrent, transition, flight familiarisation and regaining competency training based upon the following -

(a) initial training is a course of studies given to each new hire and covers the complete initial company induction syllabus and complete aeroplane type training syllabus as relating to the person's assigned duties. Initial training and the related examinations must be reviewed and revised from time to time and at any time new information becomes relevant to the OCS as the result of operational or safety management system (SMS) feedback;

(b) recurrent training shall occur every 12 months and include new material that may have been added to the initial course of studies or new information resulting from operational experience that may affect the efficiency, effectiveness or safety of the operator's OCS;

(c) transition training is training provided for any FOO to make a transition from one type of aeroplane type or variant to another except where the Executive Director allows such aeroplanes or variants to be grouped together as, an aeroplane type;

(d) flight familiarisation is training provided to each FOO for the purpose of ensuring an enhanced knowledge of the operational practices of a flight in progress and the manner of interfacing with the flight watch system; and

(e) regaining competency is training provided to a FOO when such person has not acted in the capacity for which they have been trained.

6. Flight follower training

(1) Each person assigned to act as a flight follower who is not the holder of a FOO certification shall receive training appropriate to his or her assigned duties.

(2) Where flight followers are utilised only under the direct supervision of a certified FOO, training may be accomplished in an on-the-job training programme that includes sufficient technical knowledge in the training programmes required in section 5 above. Such on-the-job-training programme and the specific duties of a flight follower who does not hold a FOO credential shall be published in the operator's operations manual.

(3) Where flight followers are not utilised under the direct supervision of a certified FOO, training may be accomplished in an on-the-job training programme under a suitably qualified flight follower.

7. Operator's company induction syllabus for initial training

(1) The content of a company induction training programme for a FOO shall include -

(a) the operations manual system covering pertinent information dealing with -

(i) manual structure including all manuals providing need to know information for dispatchers and the amendment procedures for such manual system;

(ii) company management organisation and how the OCS interfaces with management;

(iii) duties and responsibilities of those exercising operational control of flight following services;

(iv) operators approved for categories A or B operational control system, a full description of the system so approved;

(v) specific domestic and foreign rules and regulations significant to the operator by virtue of its type and area of operation giving emphasis on regulatory differences from the Namibian regulations;

(vi) dispatch release policy;

(vii) procedures for the resolution of conflict between the dispatcher and the PIC;

(viii) flight following services and provision of information to a flight;

(ix) local weather patterns and tendencies;

(x) operator's fuel policy;

(xi) dispatch interface with the operator's SMS;

(xii) dispatch interface with the operator's QA programme;

(xiii) details of the operator's security programme;

(xiv) details of the maintenance release policy;

(xv) details of the operator's emergency response plan including OCS participation in overdue or missing aeroplanes;

(xvi) handling a declaration of an emergency;

(xvii) operational weather minima;

(xviii) the approved types of operational flight plans and flight planning procedures;

(xix) crew resource management training including human factors, risk analysis and error management training;

(xx) dangerous goods training as applicable;

(xxi) details of the operator's load control procedures;

(xxii) details of the operator's communication equipment and policies including communication failure procedures;

(xxiii) details of the operator's official reporting systems;

(xxiv) surface contamination training where the operator operates into areas where surface contamination is known to exist; and

(xxv) company policy with respect to the dissemination of information relating to -

(aa) weather specials, severe or weather phenomena;

(bb) Notams; or

(cc) security measures;

(b) details of the air operator certificate and operations specifications including -

(i) Part A General provisions;

(ii) Part B En route authorisations and limitations including special authorities;

(iii) Part C Aerodrome authorisations and limitations;

(iv) Part D Maintenance;

(v) Part E Mass and balance;

(vi) Part F Interchange of equipment operations; and

(vii) Part G Aircraft leasing operations; and

(c) any other subject area the Executive Director deems to be pertinent.

(2) The content of a company induction training programme for a flight follower shall include those items from paragraph (1) related to the flight follower's duties.

8. Aeroplane type specific training - FOO

(1) An operator shall provide to each FOO a course of studies relating to each type of aeroplane over which operational control is to be exercised by such person.

(2) The aeroplane course shall be named by the aeroplane type and where a variant or aeroplane group is represented, the course title shall be so revised.

(3) Each aeroplane type specific course shall provide a systems overview appropriate to the duties of a FOO. In addition, a detailed description in the normal, abnormal, emergency and supplementary procedures, including the related limitations and how those limitations may impact the decisions and assistance rendered by the person responsible for flight following.

(4) Where the aeroplane is authorised to be operated in accordance with an MEL, those systems so authorised must be discussed with reference to the appropriate ATA number of the MEL.

(5) Each course shall be based upon the aeroplane manufacturer's AFM, AOM or SOPs, as applicable, as adopted by the operator.

(6) The aeroplane technical training syllabus must include a description of at least the following -

(a) Aircraft General -

(i) exterior features;

(ii) interior features;

(iii) weights and dimensions; and

(iv) bridge and gate requirements;

(b) Electrical System - general overview to ensure the FOO has acquired a working knowledge of what consequences may result from a variety of failures of the systems and how assistance could be rendered;

(c) Fuel System -

(i) general;

(ii) fuelling and defueling procedures;

(iii) fuelling with passengers on board and special considerations during foul weather; and

(iv) fuel consumption in terms of endurance and range;

(d) Power Plant -

(i) general overview with emphasis placed upon limitations and their impact upon flight dispatch procedures/decisions; and

(ii) each FOO must acquire a knowledge of normal, abnormal and emergency procedures sufficient to know how certain malfunctions must be handled and the appropriate level of urgency to be placed upon a flight experiencing problems with its power plants;

(e) Pneumatic System -

(i) general understanding sufficient to intervene on occasions where normal systems are not functioning normally or not available;

(ii) air sources;

(iii) distribution; and

(iv) external cart;

(f) Ice and Rain Protection -

(i) engine anti-ice;

(ii) wing and airframe anti-ice;

(iii) normal operation;

(iv) limitations; and

(v) knowledge of the capabilities of the aeroplanes in icing conditions that they oversee;

(g) Air Conditioning and Pressurisation - general overview of the consequences of failure of the system as related to altitude, range and safety/health issues;

(h) Hydraulic Power - general description and the impact of failure on aeroplane performance;

(i) Landing Gear - general description and dispatch considerations in the event of failure or malfunction;

(j) Avionics -

(i) general; and

(ii) navigation and communication equipment and company adopted procedures relating to navigation and communication; and

(k) Performance -

(i) general;

(ii) flight planning;

(iii) take-off performance;

(iv) en route performance;

(v) landing performance;

(vi) abnormal operations/non-standard configurations; and

(vii) MEL/CDL considerations.

9. Flight familiarisation training - FOO

(1) An operator shall provide to each FOO flight familiarisation training every 12 months as an observer occupying a flight deck observer seat during not less than one flight sector. The flight deck seat should provide the FOO with the ability to hear all voice communications.

(2) Flight familiarisation must commence at the dispatch centre and the observer given the opportunity to receive the briefing and to witness how this information is used for the different phases of the flight.

(3) Flight familiarisation shall be recorded and signed by the observer and the pilot-in-command.

B. OTHER EMPLOYEES AND SERVICE AGENT TRAINING

1. Security training for ground personnel

(1) An operator shall provide security training for the purpose of heightening overall security awareness within the ground operating personnel whose function is essential to flight operations. Ground personnel considered significant to aeroplane operations would include but not be limited to -

(a) personnel designated as dangerous goods packing, shipping or loading of dangerous materials;

(b) service counter personnel;

(c) personnel designated as cargo, mail or baggage handlers;

(d) catering personnel;

(e) service personnel whose function would require coming into contact with or have access to an aircraft or its loading or service bays;

(f) maintenance personnel; or

(g) personnel who man stores handling anything that is designated for, or is likely to be placed on an aeroplane.

(2) The training required by paragraph (1) must be designed 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.

121.03.11 TRAINING, CHECKING, CERTIFICATION AND VALIDITY PERIOD

1. Checking - flight crew members

(1) Upon completion of the applicable ground and flight training in accordance with TS 121.03.4 or 121.03.5, and following upgrade training, each flight crew member shall successfully demonstrate their proficiency by undergoing the appropriate skills test as described in Schedules 1, 2, or 3 of this TS and where deemed necessary, a combination of such tests.

(2) In addition, a flight crew member shall successfully complete a line check following initial or upgrade line induction training and annually thereafter. Such line check shall be completed by a company check pilot and the results of the check recorded in the crew member's training records. A line check is to consist of an assessment of the flight crew member's ability to conduct safe operations over a representative route of the air service operator's route structure.

(3) Line checks shall be conducted by a suitably qualified company check pilot nominated by an air service operator and approved by the Authority.

2. Checking - cabin crew members

(1) A cabin crew member shall, upon completion of the training indicated below, successfully complete the knowledge examinations and checks as outlined herein -

(a) following operator induction training, an examination of the subjects;

(b) following initial training, an examination covering the subjects referred to in CAR 64.02.2, as applicable;

(c) following type and differences training, an examination covering the subjects listed in TS 121.03.5; and

(d) following recurrent training, an examination covering the subjects for which training was received.

(2) An operator shall conduct in-flight proficiency line checks on cabin crew members on at least one of the aeroplane types flown.

(3) An operator shall specify the frequency of the checks referred to in subsection (2) in its operations manual. The interval between checks shall not exceed 24 months.

(4) The in-flight proficiency line checks shall be conducted by suitably qualified company check cabin crew nominated by an operator and approved by the Authority.

3. Checking and certification - flight operations officers and flight followers

(1) Each flight operations officer (FOO) undergoing generic FOO training is subject to the following checking requirements -

(a) examinations shall be administered to each FOO-trainee at least at the completion of each phase of training. A FOO-trainee shall not progress to a higher level of training until he or she has achieved a passing grade on each examination. All examinations shall be to a depth that ensures a high level of comprehension has been demonstrated by the trainee; and

(b) following completion of all segments of the generic programme, the FOO-trainee shall pass a practical examination consisting of the simulated flight dispatch of an aeroplane over a route.

(2) Each FOO undergoing operator-specific training is subject to the following checking requirements -

(a) following completion of initial operator-specific training, each FOO shall successfully complete a proficiency check involving the dispatch and flight following of an aircraft and crew. The FOO shall-

(i) 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;

(ii) determine the optimum flight path for each segment and create accurate manual and/or computer generated flight plans;

(iii) provide operating supervision and all other assistance to a flight in actual or simulated adverse weather conditions, as appropriate to the duties of the holder of a FOO certificate; and

(iv) assist in accordance with established procedures in a simulated or actual emergency or overdue aeroplane; and

(b) following completion of any recurrent, transition or regaining qualifications training, the FOO shall demonstrate to the operator his or her ability to perform the functions assigned and display adequate knowledge of the policies and procedures associated with the operational control system (OCS).

(3) Each flight follower shall undergo a technical examination to establish a satisfactory level of knowledge and demonstrate flight following skills to the operator following initial operator-specific training. The results of the examination shall be retained on the flight follower's training file.

4. Certification

(1) A check report shall be used for all skills tests of a FOO required by this TS. A copy of each FOO check report must be retained on the FOO training file.

(2) The training organisation conducting the generic training of a FOO shall issue a certificate attesting that the FOO has satisfactorily completed the FOO generic course.

(3) The operator or organisation conducting FOO operator-specific training shall issue a certificate of competency to a FOO who has successfully completed the approved training programme and the subsequent check.

(4) Any certificate required by this TS shall be retained on the FOO's training file.

Note - *Sample copies of the report referred to in paragraph (1) and the certificate in paragraphs (2)and (3) are available from the NCAA.*

SCHEDULE 1

OPC Criteria For Level A, B, C, and D Training and Checking Programmes Using Level A, B, C, and D FFS

1. Pre-flight Phase

(1) Flight planning and equipment examinations are not mandatory when there are, in the training records, written examinations from initial or annual training for which the validity period has not expired.

(2) Flight planning shall include a practical examination on the crew's knowledge of operator's approved SOPs and the AFM including aeroplane and runway performance charts, and weight and balance procedures.

(3) The equipment examination shall consist of a display of practical knowledge of the airframe, engine, major components and systems including the normal, abnormal and emergency operating procedures and limitations relating thereto.

2. Flight Phase

(1) Taxiing -

(a) the use of the taxiing check list; and

(b) taxiing in compliance with clearances and instructions issued by the person conducting the OPC;

(c) where a second-in-command is undergoing the pilot proficiency check, outlined above to the extent practicable from the second-in-command position.

(2) Engine Checks -

Engine checks shall be conducted as appropriate to the aeroplane type.

(3) Take-off

(a) one normal take-off to be performed in accordance with the AFM;

(b) an instrument take-off in the minimum visibility approved for the operator;

(c) a take-off in a minimum of a 10kt crosswind component;

Note - *Any or all of the above take-offs may be combined*.

(d) a take-off with failure of the critical engine at a speed greater than V1 and at an altitude of less than 50 feet AGL; or at a speed as close as possible to, but greater than V1 when V1 and V2, or V1 and Vr are identical; and

(e) a rejected take-off prior to V1 or as appropriate to the aeroplane type.

(4) Instrument Procedures -

Instrument procedures shall consist of IFR pre-flight preparations, terminal and en route procedures, arrival and departure procedures, system malfunctions and where applicable, the proper programming and use of flight management systems, as applicable -

(a) an area departure and an area arrival procedure shall be performed where the crew -

(i) adheres to air traffic control clearances and instructions; and

(ii) properly uses the available navigation equipment and facilities;

(b) a holding procedure;

(c) at least two instrument approaches performed in accordance with the procedures and limitations in the AIP or in the equivalent foreign publication or approved company approach procedure for the facility used. One of the approaches shall be a precision approach and one a non-precision approach;

(d) one approach and manoeuvre to land using a scene approved for circling where the operator is authorised for approaches at the published circling minima, and is required during initial qualification check and annually thereafter; and

(e) one complete missed approach.

(5) Manoeuvres -

Manoeuvres for initial OPC type rating should be as published by the manufacturer in the aeroplane profiles section. For a recurrent OPC, flight profiles may be selected as deemed appropriate by the examiner but in any case the selected profiles must be demonstrated in accordance with the manufacturer's profiles. At least the following flight manoeuvres must be demonstrated -

(a) at least one steep turn in each direction with a bank angle of 45° and a change in heading of at least 180° but not more than 360°;

(b) approaches to stalls -

Note - *For the purpose of this manoeuvre the required approach to a stall is reached when there is a perceptible buffet or other alert to an impending stall*.

(i) the following approaches to stall configurations are required for initial and upgrade OPCs -

(aa) one in the take-off configuration, except where a zero-flap take-off configuration is normally used in that model and type of aeroplane. In such case one stall should be demonstrated with the aeroplane configured for normal manoeuvring;

(bb) one in a clean configuration; and

(cc) one in a landing configuration; and

(ii) on the approach to a stall demonstrated in the manoeuvring configuration the aeroplane shall be placed into a turn with a bank angle of between 15° and 30°.

Note - *Steep turns and approach to stalls are not required for an initial OPC on a fly-by-wire aeroplane if steep turns and approach to stalls have been satisfactorily demonstrated during initial training and for a recurrent OPC on any aircraft if steep turns and approaches to stalls have been satisfactorily demonstrated during the recurrent training*.

(6) Landings and Approaches to Landings -

(a) one normal landing;

(b) one landing from an approach in Instrument Meteorological Conditions (IMC) not greater than the minimum recommended for the approach;

(c) one crosswind landing with a minimum of a 10kt crosswind component;

(d) one landing and manoeuvre to that landing with, depending on aeroplane type, an engine failure as follows -

(i) for a two engine aeroplane, failure of one engine;

(ii) for a three engine aeroplane, failure of the centre engine combined with the failure of one outboard engine for the pilot-in-command, and failure of one outboard engine only for other than the pilot-in-command;

(iii) for a four engine aeroplane, failure of two engines on the same side for the pilot-in-command and, failure of one outboard engine only for other than the pilot-in-command;

Note - *For three and four engine aeroplanes, the pilot-in-command is required to perform a two engine inoperative procedure during the initial qualification check and annually thereafter*.

(e) one rejected landing. For the purposes of the rejected landing the landing shall be rejected at a height of approximately 50 feet when the aeroplane is approximately over the runway threshold. The rejected landing may be combined with a missed approach;

(f) Category II or Category III approaches during the initial qualification flight and annually thereafter as follows -

(i) where CAT II approaches are authorised in the air operator certificate, the following is required -

(aa) for a pilot-in-command initial qualification -

(A) one CAT II ILS approach during which a practical emergency is introduced aimed at assessing crew co- ordination in decision making and the resultant missed approach; and

(B) a second CAT II ILS approach to a landing in CAT II weather minima;

(bb) for a pilot-in-command requalification on CAT II approaches, at least one CAT II ILS approach to a landing annually; and

(ii) where both CAT II and CAT III approaches are authorised in the air operator certificate, the following is required -

(aa) for a pilot-in-command initial qualification -

(A) one CAT II ILS approach during which a practical emergency is introduced aimed at assessing crew co- ordination in decision making and the resultant missed approach; and

(B) a CAT III ILS approach conducted to a landing in CAT III weather minima; and

Note - *For a pilot-in-command requalification on CAT II and CAT III approaches, successive 6 month OPCs in an approved simulator will alternate CAT II and CAT III renewal checks*.

(g) one landing without the use of an auto-land system.

Note - *Any of the landings and approaches to landings specified in this section may be combined. A minimum of two landings are required*.

(7) Normal Procedures -

The crew shall demonstrate use of as many of the operator's approved SOPs and normal procedures as are necessary to confirm that the crew has the knowledge and ability to properly use installed equipment (auto-pilot and hand-flown manoeuvres as appropriate).

(8) Abnormal and Emergency Procedures -

(a) the crew shall demonstrate use of as many of the operator's approved SOPs and abnormal and emergency procedures for as many of the situations as are necessary to confirm that the crew has an adequate knowledge and ability to perform these procedures;

(b) system malfunctions shall consist of a selection adequate to determine that the crew has satisfactory knowledge and ability to safely handle malfunctions; and

(c) at least two simulated engine failures, excluding failures on the runway followed by a rejected take-off, at any time during the check.

(9) Airborne Manoeuvres -

Where the OPC is conducted following initial training in a level A or B training programme, the following flight checking is required within 30 days after the OPC in a synthetic training device and may be run concurrent with the flight training requirements on the aeroplane type in the applicable training programme -

(a) interior and exterior aeroplane pre-flight checks;

(b) ground handling for pilots-in-command;

(c) normal take-off, visual circuit (where possible) and landing;

(d) a simulated engine failure procedure after take-off (at safe altitude and airspeed);

(e) a simulated engine inoperative landing; and

(f) a normal missed approach.

SCHEDULE 2

OPC Criteria for Level E Training and Checking Programme using the Aeroplane only

1. Pre-flight Phase

(1) Flight Planning and Equipment Examination -

(a) Flight planning and equipment examinations are not mandatory when there are, in the training records, written examinations from initial or annual training for which the validity period has not expired;

(b) Flight planning shall include a practical examination on the pilot's knowledge of standard operating procedures and the Aircraft Flight Manual including performance charts, loading, weight and balance and Flight Manual Supplements; and

(c) The equipment examination shall show a practical knowledge of the airframe, engine, major components and systems including the normal, abnormal and emergency operating procedures and limitations relating thereto.

(2) Aeroplane Inspection -

A pre-flight aeroplane inspection that includes -

(a) a visual inspection of the exterior and interior of the aeroplane, locating each item to be inspected and explaining the purpose of the inspection;

(b) the proper use of the pre-start, start and pre-taxi check lists; and

(c) checks of the appropriate radio communications, navigation and electronic equipment and selection of the appropriate communications and navigation frequencies prior to flight.

2. Flight Phase

(1) Taxiing

(a) taxiing procedures;

(b) a taxiing check including -

(i) the use of the taxiing check list; and

(ii) taxiing in compliance with clearances and instructions issued by the appropriate air traffic control unit or by the person conducting the pilot proficiency check; and

(iii) where a second-in-command is undergoing the pilot proficiency check, the taxiing check outlined above to the extent practicable from the second-in-command position.

(2) Engine Checks

Engine checks shall be conducted as appropriate to the aeroplane type.

(3) Take-off

(a) One normal take-off to be performed in accordance with the AFM or where the aeroplane is a turbo-jet, a noise abatement take-off performed in accordance with the AFM (where applicable) and the procedures specified in the departure procedures for the aerodrome being operated from;

(b) An instrument take-off performed in the same manner as the normal take-off except that instrument flight rules are simulated at or before reaching an altitude of 200 feet above the airport elevation;

(c) Where practicable under existing meteorological, airport or airport traffic conditions, one crosswind take-off performed in accordance with the aeroplane operating manual where applicable;

Note - *Any or all of the above take-offs may be combined*.

(d) A simulated engine failure after take-off (at a safe altitude and airspeed) appropriate to the aeroplane type under the prevailing conditions; and

(e) A rejected take-off explained by the candidate prior to the flight.

(4) Instrument Procedures

Instrument procedures shall consist of IFR pre-flight preparation, departure and en route procedures, terminal procedures and system malfunction -

(a) an area departure and an area arrival procedure shall be performed where the pilot -

(i) adheres to actual or simulated air traffic control clearances and instructions; and

(ii) properly uses the available navigation facilities;

(b) a holding procedure;

(c) at least two instrument approaches performed in accordance with procedures and limitations in the AIP or the equivalent foreign publication, or approved company approach procedure for the approach facility used. Where practicable one of the approaches shall be a precision approach and one a non-precision approach;

(d) a circling approach, where the operator is authorised for circling minima below ceiling 1000 feet and 3 miles ground visibility, except where local conditions beyond the control of the pilot prevent a circling approach from being performed.

(5) In-Flight Manoeuvres

(a) at least one steep turn in each direction with a bank angle of 45° and a change in heading of at least 180° but not more than 360°; and

(b) approaches to stalls -

Note - *For the purpose of this manoeuvre the required approach to a stall is reached when there is a perceptible buffet or other alert to an impending stall*.

The following approaches to stall configurations are required for initial and upgrade OPCs -

(i) one in the take-off configuration, except where a zero-flap take-off configuration is normally used in that model and type of aeroplane. In such case one stall should be demonstrated with the aeroplane configured for normal manoeuvring;

(ii) one in a clean configuration; and

(iii) one in a landing configuration.

On the approach to a stall demonstrated in the manoeuvring configuration the aeroplane shall be shall be placed into a turn with a bank angle of between 15° and 30°.

For the purpose of this manoeuvre the required recovery from a stall is initiated when there is a perceptible buffet or other alert of an impending stall entry.

When performed in an aeroplane the approach to stalls shall be conducted at an altitude of at least 5000 feet AGL and if conducted above cloud at an altitude of at least 2000 feet above the cloud tops.

(6) Landings and Approaches to Landings

(a) one normal landing which shall, where practicable, be conducted without external or internal glideslope information;

(b) one landing from an instrument approach, and where prevailing conditions prevent an actual landing, an approach to a point where a landing could have been made;

(c) one cross wind landing where practicable under existing meteorological, airport and airport traffic conditions;

(d) one landing and manoeuvring to that landing with a simulated failure of 50 per cent of the available engines which shall be on one side of the aeroplane for the pilot-in-command and on outboard engine only for other than the pilot-in-command. Where the aeroplane type is a three engine aeroplane, the loss of power shall be an outboard engine and the centre engine for the pilot-in-command and on outboard engine for other than the pilot-in-command. For three- and four-engine aeroplanes the pilot-in-command is required to perform a two-engine inoperative procedure during initial qualification check and annually thereafter; and

(e) one landing under simulated circling approach conditions except that where prevailing conditions prevent a landing, an approach to a point where a landing could have been made.

Note - *Any of the landings and approaches to landings specified in this section may be combined. A minimum of two landings are required.*

(7) Normal Procedures

The crew shall demonstrate use of as many of the operator's approved SOPs and normal procedures as are necessary to confirm that the crew has the knowledge and ability to properly use installed equipment (auto-pilot and hand flown manoeuvres as appropriate).

(8) Abnormal and Emergency Procedures

(a) The crew shall demonstrate use of as many of the operator's approved SOPs and abnormal and emergency procedures for as many of the emergency situations as is necessary to confirm that the crew has an adequate knowledge and ability to perform these procedures.

(b) System malfunctions shall consist of a selection adequate to determine that the crew has satisfactory knowledge and ability to safely handle malfunctions.

(c) At least two simulated engine failures any time during the check shall be introduced.

SCHEDULE 3

OPC for a Cruise Relief Pilot using a FFS

(1) Flight Planning and Equipment Examination

(a) Flight planning and equipment examinations are not mandatory when there are, in the training records, written examinations from initial or annual training for which the validity period has not expired.

(b) Flight planning shall include the CRP's knowledge of the operator's SOPs and the AFM.

(c) The equipment examination shall consist of a display of practical knowledge of the aeroplane systems including normal, abnormal and emergency operating procedures.

(2) Aeroplane Manoeuvres

The following shall be demonstrated -

(a) climb and descent as well as climbing and descending turns;

(b) steep turns;

(c) approach to stalls in the clean configuration;

(d) manoeuvring the aeroplane at minimum and maximum speeds (mach) at optimum altitude; and

(e) auto-pilot use, including during normal climb and descent and turbulence.

Note - *Steep turns and approach to stalls are not required if the OPC is conducted via either a LOFT scenario, a scripted OPC or on a fly-by- wire aeroplane; and -*

1. for an initial OPC on aeroplane type, steep turns and approach to stalls have been satisfactorily demonstrated during initial training;

2. for a semi-annual OPC if -

(a) steep turns and approach to stalls are required in the applicable annual training syllabus and they have been satisfactorily demonstrated during this training; or

(b) steep turns and approaches to stalls are not required in the applicable annual training syllabus.

(3) Normal procedures

The CRP shall demonstrate use of as many of the operator's approved SOPs and normal procedures for installed systems, devices and aids as are necessary to confirm that the CRP has the knowledge and ability to properly use installed equipment.

(4) Abnormal and Emergency Procedures

The CRP shall demonstrate use of as many of the operator's SOPs and abnormal and emergency procedures for as many of the emergency situations relating to cruise flight as are necessary to confirm that the CRP has an adequate knowledge and ability to perform these procedures.

(5) Instrument Rating Renewal

If the cruise relief pilot's instrument rating is to be renewed, all of the manoeuvres required to satisfy renewal of an instrument rating shall be part of the proficiency check.

121.04.2 OPERATIONS MANUAL

Note - *The required information may be contained in one manual or, due the size and complexity of the operator, may be contained in several manuals, in which case the operator has established an operations manual system. For the purposes of this regulation the term "operations manual" includes an "operations manual system" if that is what the operator has established.*

1. Structure of operations manual

(1) An operator must ensure that the main structure of the operations manual is as follows -

Part A: General

This part must comprise all non-type-related operational policies, instructions and procedures needed for a safe operation and must comply with all relevant CAR.

Part B: Aeroplane operating matters

This part must comprise all type-related instructions and procedures needed for a safe operation. It must take account of the different types of aeroplanes or variants used by the operator.

Part C: Route and aerodrome instructions and information

This part must comprise all instructions and information needed for the area of operation.

Part D: Training

This part must comprise all training instructions for personnel required for a safe operation.

(2) An operator must ensure that the contents of the operations manual are in accordance with section 2 of this technical standard and relevant to the area and type of operation.

(3) An operator must ensure that the detailed structure of the operations manual is approved by the Executive Director.

2. Contents of operations manual

2.1. PART A: GENERAL

2.1.1. Administration and control of operations manual

(1) An operations manual must contain certain statements and provisions for the manual administration and control and include at least the following -

(a) a statement that the manual is intended to comply with all applicable acts, regulations and associated technical standards and with the terms and conditions of the applicable operating certificate and operations specifications attached thereto;

(b) a statement that where any person is confronted with an operational situation not contemplated by the operations manual, such person will be expected to act in accordance with his or her most conservative discretion. Furthermore, where any part of the manual is considered to be repugnant to any provision referred to in sub-paragraph (a), such person shall comply with the respective legal statute and report the discrepancy to the Operations Manager by the quickest means possible;

(c) a statement that the manual contains operational instructions that are to be complied with by the relevant personnel;

(d) a list and brief description of the various parts, their contents, applicability and use;

(e) explanations and definitions of terms and words needed for the use of the manual;

(f) provisions for the issuance of an a operations manual in separate parts corresponding to specific aspects of operations, provided in accordance; and

(g) a brief description of the operator's manual system that lists all operational and technical manuals developed or adopted by the operator for the purpose of ensuring operations personnel have been provided all information necessary for the performance of their duties. Such description must also indicate which of such manuals will be available on board an aeroplane during flight time.

(2) System of amendment and revision -

(a) who is responsible for the issuance and insertion of amendments and revisions;

(b) a record of amendments and revisions with insertion dates and effective dates;

(c) in the interests of aviation safety, a statement that provides for the rapid dissemination of operational information with a system of priorities governing the implementation process. Handwritten amendments and revisions are not permitted except in situations requiring immediate amendment or revision in the interests of aviation safety;

(d) a description of the system for the annotation of pages and their effective dates;

(e) a list of effective pages;

(f) annotation of changes (on text pages and, as far as practicable, on charts and diagrams);

(g) temporary revisions; and

(h) a description of the distribution system for the manuals, amendments and revisions.

2.1.2. Organisation and responsibilities

(1) Organisational structure

A description of the organisational structure including the general organogram and operations department organogram. The organogram must depict the relationship between the Operations Department and the other Departments of the organisation. In particular, the subordination and reporting lines of all Divisions, Departments, etc., which pertain to the safety of flight operations, must be shown.

(2) Nominated post-holders

The name of each nominated post-holder responsible for flight operations, the safety management system, the maintenance system, flight crew training and ground operations. A description of their functions and responsibilities must be included.

(3) Responsibilities and duties of operations management personnel

A description of the duties, responsibilities and authority of operations management personnel pertaining to the safety of flight operations and the compliance with the applicable CAR.

(4) Authority, duties and responsibilities of the pilot-in-command

A statement defining the authority, duties and responsibilities of the pilot-in-command.

(5) Duties and responsibilities of crew members other than the pilot-in-command

A statement defining the duties and responsibilities of crew members other than the pilot-in-command.

2.1.3. Operational control and supervision

(1) Supervision of the operation by the operator

A description of the system for supervision of the operation by the operator. This must show how the safety of flight operations and the qualifications of personnel are supervised. In particular, the procedures related to the following items must be described-

(a) licence and qualification validity;

(b) competence of operations personnel; and

(c) control, analysis and storage of records, flight documents, additional information and data.

(2) System of promulgation of additional operational instructions and information

A description of any system for promulgating information which may be of an operational nature but is supplementary to that in the operations manual. The applicability of this information and the responsibilities for its promulgation must be included.

(3) Operational control

(a) A description of the procedures and responsibilities necessary to exercise operational control with respect to flight safety-

(b) A description of policies and procedures for third parties that perform work on the air service operator's behalf.

2.1.4. Safety management system (SMS)

A description of the organisation of, roles and responsibilities of the personnel employed in, and policies and procedures associated with the safety management system. The description of the SMS may be contained in a separate manual depending upon the size and complexity of the operator.

2.1.5. Quality management system (QMS)

A description of the organisation of, roles and responsibilities of the personnel employed in, and policies and procedures associated with the QMS, which is normally integrated with the SMS. The description of the QMS may be contained in the SMS manual or a quality management manual (QMM) depending upon the size and complexity of the operator.

2.1.6. Flight crew composition

(1) Flight crew composition

An explanation of the method for determining flight crew compositions taking account of the following -

(a) the type of aeroplane being used;

(b) the area and type of operation being undertaken;

(c) the phase of the flight;

(d) the minimum flight crew requirement and flight duty period planned;

(e) experience (total and on type), recency and qualification of the flight crew members; and

(f) the designation of the pilot-in-command and, if necessitated by the duration of the flight, the procedures for the relief of the pilot-in-command or other members of the flight crew.

(2) Designation of the pilot-in-command

The rules applicable to the designation of the pilot-in-command.

(3) Flight crew incapacitation

Instructions on the succession of command in the event of flight crew incapacitation.

2.1.7. Qualification requirements

(1) A description of the required licence, rating(s), qualification/competency (e.g. for routes and aerodromes), experience, training, checking and recency for operations personnel to conduct their duties. Consideration must be given to the aeroplane type, kind of operation and composition of the flight crew.

(2) Flight deck crew (as applicable)

(a) Pilot-in-command

(b) Second-in-command

(c) Pilot under supervision

(d) Cruise relief pilot

(e) Flight engineer

(f) Operation on more than one type or variant.

(3) Cabin crew

(a) Senior cabin crew member

(b) Cabin crew member

(i) Required cabin crew member

(ii) Additional cabin crew member and cabin crew member during familiarisation flights.

(c) Operation on more than one type or variant.

(4) Training, checking and supervision personnel

(a) For flight deck crew

(b) For cabin crew.

(5) Other operations personnel.

2.1.8. Flight crew health precautions

The relevant regulations and guidance to flight crew members concerning health including -

(a) alcohol and other intoxicating liquor;

(b) narcotics;

(c) drugs;

(d) sleeping tablets;

(e) pharmaceutical preparations;

(f) immunisation;

(g) scuba diving;

(h) blood donation;

(i) meal precautions prior to and during flight;

(j) sleep and rest; and

(k) surgical operations.

Note - *See Document NAM-CATS 67.*

2.1.9. Flight time limitations

(1) Flight time and duty period limitations and rest requirements

A description of the flight time and duty period limitations and rest requirements shall be as prescribed in TS 121.02.13 as applicable to the operation.

(2) Exceedances of flight time and duty period limitations and/or reductions of rest periods

Conditions under which flight time and duty periods may be exceeded or rest periods may be reduced and the procedures used to report these modifications.

2.1.10. Operating procedures

(1) Flight preparation instructions

As applicable to the operation -

(a) a description of the method of determination and application of minimum altitudes including -

(i) a procedure to establish the minimum altitudes/flight levels for VFR flights; and

(ii) a procedure to establish the minimum altitudes/flight levels for IFR flights;

(b) criteria for determining the usability of aerodromes;

(c) the method for establishing aerodrome operating minima for IFR flights in accordance with TS 91.07.5. Reference must be made to procedures for the determination of the visibility and/or runway visual range and for the applicability of the actual visibility observed by the pilots, the reported visibility and the reported runway visual range;

(d) en route operating minima for IFR and VFR flights or VFR portions of a flight;

(e) presentation and application of aerodrome and en route operating minima, including the increase of aerodrome operating minima in case of degradation of approach or aerodrome facilities;

(f) interpretation of meteorological information, including explanatory material on the decoding of MET forecasts and MET reports relevant to the area of operations, including the interpretation of conditional expressions;

(g) the methods by which the quantities of fuel, oil and water methanol to be carried, are determined and monitored in flight. This section must also include instructions on the measurement and distribution of the fluid carried on board. Such instructions must take account of all circumstances likely to be encountered on the flight, including the possibility of in-flight re-planning and of failure of one or more of the aeroplane's power plants or loss of pressurisation. The system for maintaining fuel and oil records must also be described;

(h) the general principles of mass and centre of gravity including -

(i) definitions;

(ii) methods, procedures and responsibilities for preparation and acceptance of mass and centre of gravity calculations;

(iii) the policy for using either standard and/or actual masses;

(iv) the method for determining the applicable passenger, baggage and cargo mass;

(v) the applicable passenger and baggage masses for various types of operations and aeroplane type;

(vi) general instruction and information necessary for verification of the various types of mass and balance documentation in use;

(vii) last minute changes procedures;

(viii) specific gravity of fuel, oil and water methanol; and

(ix) seating policy/procedures;

(i) procedures and responsibilities for the preparation and submission of the air traffic service flight plan. Factors to be considered include the means of submission for both individual and repetitive flight plans;

(j) procedures and responsibilities for the preparation and acceptance of the operational flight plan. The content and use of the operational flight plan must be described including samples of the operational flight plan formats in use;

(k) the responsibilities and the use of the operator's flight folio must be described, including samples of the format used. A technical log may be used in place of a flight folio, if it contains the required information; and

(l) list of documents, forms and additional information to be carried.

(2) Ground handling instructions

As applicable to the operation -

(a) a description of fuelling procedures, including -

(i) safety precautions during refuelling and defueling including when an APU is in operation or when a turbine engine is running and the prop-brakes are on;

(ii) refuelling and defueling when passengers are embarking, on board or disembarking ; and

(iii) precautions to be taken to avoid mixing fuels;

(b) a description of the handling procedures to be used when allocating seats and embarking and disembarking passengers and when loading and unloading the aeroplane. Further procedures, aimed at achieving safety whilst the aeroplane is on the apron, must also be given. Handling procedures must include -

(i) disembarking of persons;

(ii) sick passengers and persons with reduced mobility;

(iii) transportation of inadmissible passengers, deportees or persons in custody;

(iv) permissible size and weight of hand baggage;

(v) loading and securing of items in the aeroplane;

(vi) special loads and classification of load compartments;

(vii) positioning of ground equipment;

(viii) operation of aeroplane doors;

(ix) safety on the apron, including fire prevention, blast and suction areas;

(x) start-up, ramp departure and arrival procedures;

(xi) servicing of aeroplanes;

(xii) documents and forms for aeroplane handling; and

(xiii) multiple occupancy of aeroplane seats;

(c) procedures to ensure that persons who appear to be intoxicated or who demonstrate by manner or physical indications that they are under the influence of drugs, except medical patients under proper care, are refused embarkation;

(d) a description of the de-icing and anti-icing policy and procedures for aeroplanes on the ground. These must include descriptions of the types and effects of icing and other contaminants on aeroplanes whilst stationary during ground movements and during take-off. In addition, a description of the fluid types used must be given including -

(i) proprietary or commercial names;

(ii) characteristics;

(iii) effects on aeroplane performance;

(iv) hold-over times; and

(v) precautions during usage.

(3) Flight procedures

As applicable to the operation -

(a) a description of the policy for allowing flights to be made under VFR, or of requiring flights to be made under IFR, or of changing from one to the other.

(b) a description of all navigation procedures relevant to the type(s) and area(s) of operation and equipment required to operate therein. Consideration must be given to -

(i) standard navigation procedures including policy for carrying out independent cross-checks of keyboard entries where these affect the flight path to be followed by the aeroplane;

(ii) RVSM as contemplated in TS 91.04.34 in Document NAM-CATS-OPS 91;

(iii) RNP, MNPS and POLAR navigation and navigation in other designated areas,

(iv) RNAV;

(v) in-flight replanning; and

(vi) procedures in the event of system degradation;

(c) circumstances in which a radio listening watch is maintained;

(d) instructions on -

(i) the use of normal checklists and the timing of such use;

(ii) departure contingency procedures;

(iii) altimeter setting procedures;

(iv) altitude alerting system procedures;

(v) stabilised approach procedure and the limitation on high rates of descent near the surface;

(vi) the conduct of instrument approaches and the conditions required to commence or to continue an instrument approach;

(vii) CRM procedures at night or in IMC;

(e) TAWS procedures;

(f) policy and procedures for the use of ACAS;

(g) policy and procedures for in-flight fuel management;

(h) procedures for operating in, or recording and reporting of special, routine and non-routine meteorological observations during any phase of flight and potentially hazardous atmospheric conditions including -

(i) thunderstorms;

(ii) icing conditions;

(iii) turbulence;

(iv) windshear;

(v) jetstreams;

(vi) volcanic ash clouds;

(vii) heavy precipitation;

(viii) sand storms;

(ix) mountain waves;

(x) significant temperature inversions;

(xi) space weather events; and

(xii) report a runway breaking action special air-report AIREP when the runway braking action encountered is not as good as reported.

(i) wake turbulence separation criteria, taking into account aeroplane types, wind conditions and runway location;

(j) procedures in the event that a decision to descend is taken while en route, covering-

(i) the necessity of giving the appropriate ATS unit prior warning of the situation and of obtaining a provisional descent clearance; and

(ii) the action to be taken in the event that communication with the ATS unit cannot be established or is interrupted;

(k) the requirements for flight crew members to occupy their assigned stations or seats during the different phases of flight or whenever deemed necessary in the interests of aviation safety;

(l) the requirements for flight crew members and passengers to use safety belts and/or harnesses during the different phases of flight or whenever deemed necessary in the interests of aviation safety;

(m) the conditions for the admission to the flight deck of persons other than the flight crew;

(n) the conditions and procedures for the use of vacant flight crew seats;

(o) procedures to be followed in the event of incapacitation of flight crew members in flight. Examples of the types of incapacitation and the means for recognising them, must be included;

(p) procedures covering -

(i) cabin preparation for flight, in-flight requirements and preparation for landing including procedures for securing cabin and galleys;

(ii) procedures to ensure that passengers are seated where, in the event that an emergency evacuation is required, they may best assist and not hinder evacuation from the aeroplane;

(iii) procedures to be followed during passenger embarkation and disembarkation;

(iv) procedures in the event of fuelling with passengers on board or embarking and disembarking; and

(v) smoking on board;

(q) the contents, means and timing of passenger briefing in accordance with CAR 91.07.20;

(r) lists of the survival and emergency equipment required for each route or area of operation and the procedures to ensure such equipment has been inspected and/or is functioning properly prior to departure;

(s) information and instructions relating to the interception of civil aircraft including -

(i) procedures for pilots-in-command of an intercepted Namibian and foreign registered aircraft; and

(ii) visual signals for use by an intercepted Namibian and foreign registered aircraft;

(t) procedures for aeroplanes operated whenever required cosmic or solar radiation detection equipment is carried;

(u) procedures for the use of cosmic or solar radiation detection equipment and for recording its readings including actions to be taken in the event that limit values specified in the operations manual are exceeded; and

(v) procedures for the use of head-up displays (HUD) and enhanced vision systems (EVS) equipment as applicable.

(4) All weather operations.

(5) EDTO procedures, including engine failure procedures and the nomination of alternate aerodromes.

(6) Use of the minimum equipment and configuration deviation list(s).

(7) Development and use of standard operating procedures (SOPs) whether stand alone or as part of an aeroplane operating manual (AOM).

(8) With respect to non-revenue flights, procedures and limitations for -

(a) training flights;

(b) test flights;

(c) delivery flights;

(d) ferry flights;

(e) demonstration flights; and

(f) positioning flights,

including the kind of persons who may be carried on such flights.

(9) Oxygen requirements

(a) An explanation of the conditions under which oxygen must be provided and used.

(b) The oxygen requirements specified for -

(i) flight deck crew;

(ii) cabin crew; and

(iii) passengers.

2.1.11. Dangerous goods and weapons

(1) Information, instructions and general guidance on the conveyance of dangerous goods including -

(a) operator's policy on the conveyance of dangerous goods;

(b) guidance on the requirements for acceptance, labelling, handling, stowage and segregation of dangerous goods;

(c) procedures for responding to emergency situations involving dangerous goods;

(d) duties of all personnel involved as referred to in a Part 92; and

(e) instructions on the carriage of the operator's employees.

(2) The conditions under which weapons, munitions of war and sporting weapons may be carried.

2.1.12. Security

(1) Security instructions and guidance of a non-confidential nature which must include the authority and responsibilities of operations personnel. Policies and procedures for handling and reporting crime on board such as unlawful interference, sabotage, bomb threats and hijacking must also be included.

(2) An operator will publish the means of establishing and communicating on board an aeroplane, discrete signals as a defence against air piracy without providing specific information with respect to the actual discrete communications.

(3) A description of preventative security measures and training.

Note - *Parts of the security instructions and guidance may be kept confidential*.

2.1.13. Handling of aviation accidents and incidents

Procedures for the handling, notifying and reporting of aviation accidents and incidents. This section must include -

(a) definitions of aviation accidents and incidents and the relevant responsibilities of all persons involved;

(b) the description of which operator departments, authorities or other institutions have to be notified by which means and in which sequence in case of an aviation accident;

(c) special notification requirements in the event of an aviation accident or incident when dangerous goods are being carried;

(d) a description of the requirements to report specific aviation accidents and incidents;

(e) the forms used for reporting and the procedure for submitting them to the relevant authority shall also be included;

(f) if the operator develops additional safety related reporting procedures for its own internal use, a description of the applicability and related forms to be used; and

(g) an air operator shall establish procedures for the retention of flight recorder records and flight recorders in safe custody pending the disposition to the accident or incident investigating team.

2.1.14. Rules of the air

Rules of the air including -

(a) visual and instrument flight rules;

(b) territorial application of the rules of the air;

(c) communication procedures including COM-failure procedures;

(d) information and instructions relating to the interception of civil aeroplanes;

(e) the circumstances in which a radio listening watch is to be maintained;

(f) signals;

(g) time system used in operation;

(h) ATC clearances, adherence to flight plan and position reports;

(i) visual signals used to warn an unauthorised aeroplane flying in or about to enter a restricted, prohibited or danger area;

(j) procedures for pilots observing an aviation accident or receiving a distress transmission;

(k) the ground/air visual codes for use by survivors, description and use of signal aids; and

(l) distress and urgency signals

2.1.15 LEASING/CODE-SHARE

A description of the operational arrangements for leasing and code-share, associated procedures and management responsibilities.

2.2. PART B: AEROPLANE OPERATING MATTERS - TYPE RELATED

Taking account of the differences between types and variants of types under the following headings -

2.2.1. General information and units of measurement

General information (e.g. aeroplane dimensions), including a description of the units of measurement used for the operation of the aeroplane type concerned and conversion tables.

2.2.2. Limitations

A description of the certified limitations and the applicable operational limitations including -

(a) certification status;

(b) passenger seating configuration for each aeroplane type including a pictorial presentation;

(c) types of operation that are approved (e.g. IFR/VFR, CAT II/III, flights in known icing conditions, etc.);

(d) flight crew composition;

(e) mass and centre of gravity;

(f) speed limitations;

(g) flight envelope(s);

(h) wind limits including operations on contaminated runways;

(i) performance limitations for applicable configurations;

(j) runway slope;

(k) limitations on wet or contaminated runways;

(l) airframe contamination; and

(m) system limitations.

2.2.3. Normal procedures

The normal procedures and duties assigned to the flight crew, the appropriate check-lists, the system for use of the checklists and a statement covering the necessary coordination procedures between flight deck crew and cabin crew. The following normal procedures and duties must be included -

(a) pre-flight;

(b) pre-departure;

(c) altimeter setting and checking;

(d) taxi, take-off and climb;

(e) noise abatement;

(f) cruise and descent;

(g) approach, landing preparation and briefing;

(h) VFR approach;

(i) instrument approach;

(j) visual approach and circling;

(k) missed approach;

(l) normal landing;

(m) post landing; and

(n) operation on wet and contaminated runways.

2.2.4. Abnormal, emergency and supplementary procedures

The abnormal, emergency and supplementary procedures and duties assigned to crew members, the appropriate check-lists, the system for use of the checklists and a statement covering the necessary coordination procedures between flight crew and cabin crew. The following abnormal and emergency procedures and duties must be included-

(a) flight crew incapacitation;

(b) fire and smoke drills;

(c) unpressurised and partially pressurised flight;

(d) exceeding structural limits such as overweight landing;

(e) exceeding cosmic radiation limits;

(f) lightning strikes;

(g) distress communications and alerting ATC to emergencies;

(h) engine failure;

(i) system failures;

(j) guidance for diversion in case of serious technical failure;

(k) ground proximity warning;

(l) TCAS warning;

(m) windshear;

(n) emergency landing/ditching; and

(o) emergency evacuation.

2.2.5. Performance

(1) Performance data must be provided in a form in which it can be used without difficulty.

(2) Performance material which provides the necessary data for compliance with the performance requirements prescribed in Subpart 8 of CAR must be included to allow the determination of -

(a) maximum crosswind and tailwind components and the reductions to be applied to these values having regard to gusts, low visibility, runway surface conditions, crew experience, abnormal or emergency circumstances or any other relevant operational factors;

(b) take-off climb limits - mass, altitude, temperature;

(c) take-off field length (dry, wet, contaminated);

(d) net flight path data for obstacle clearance calculation or, where applicable, take-off flight path;

(e) the gradient losses for banked climb-outs;

(f) en route climb limits;

(g) approach climb limits;

(h) landing climb limits;

(i) landing field length (dry, wet, contaminated) including the effects of an in-flight failure of a system or device, if it affects the landing distance;

(j) brake energy limits;

(k) speeds applicable for the various flight stages (also considering wet or contaminated runways); and

(l) aeroplane climb performance with all engines operating to enable the PIC to determine the climb gradient that can be achieved during the departure phase for the existing take-off conditions and intended take-off technique.

(3) Supplementary data covering flights in icing conditions, in consideration of -

(a) any certificated performance related to an allowable configuration, or configuration deviation, such as anti-skid inoperative, must be included; and

(b) if performance data, as required for the appropriate performance class, is not available in the approved AFM, then other data acceptable to the Executive Director must be included. Alternatively, the operations manual may contain cross-reference to the approved data contained in the AFM where such data is not likely to be used often or in an emergency.

(4) Additional performance data, where applicable, including -

(a) all engine climb gradients;

(b) drift-down data;

(c) effect of de-icing/anti-icing fluids;

(d) flight with landing gear down;

(e) for aeroplanes with 3 or more engines, one engine inoperative ferry flights; and

(f) flights conducted under the provisions of the CDL.

2.2.6. Flight planning

(1) Data and instructions necessary for pre-flight and in-flight planning, including factors such as speed schedules and power settings. Where applicable, procedures for engine(s)-out operations, EDTO and flights to isolated aerodromes must be included.

(2) The method for calculating fuel needed for the various stages of flight in accordance with TS 121.07.10.

2.2.7. Mass and balance

Instructions and data for the calculation of the mass and balance including -

(a) calculation system (e.g. index system);

(b) information and instructions for completion of mass and balance documentation, including manual and computer generated types;

(c) limiting masses and centre of gravity of the various versions; and

(d) dry operating mass and corresponding centre of gravity or index.

2.2.8. Loading

Procedures and provisions for loading and securing the load in the aeroplane.

2.2.9. Configuration deviation list

The company approved procedures for the use of a CDL, if provided by the manufacturer, taking account of the aeroplane types and variants operated including procedures to be followed when an aeroplane is being dispatched under the terms of its CDL.

2.2.10. Minimum equipment list

The company approved procedures for the use of a MEL taking account of the aeroplane types and variants operated and the type(s)/area(s) of operation.

2.2.11. Survival and emergency equipment including oxygen

(1) A list of the survival equipment to be carried for the routes to be flown and the procedures for checking the serviceability of this equipment prior to take-off. Instructions regarding the location, accessibility and use of survival and emergency equipment and its associated check lists(s) must also be included.

(2) The procedure for determining the amount of oxygen required and the quantity that is available. The flight profile, number of occupants and possible cabin decompression must be considered. The information provided must be in a form in which it can be used without difficulty.

2.2.12. Emergency evacuation procedures

(1) Instructions for preparation for emergency evacuation including flight crew coordination and emergency station assignment.

(2) A description of the duties of all crew members for the rapid evacuation of an aeroplane and the handling of the passengers in the event of a forced landing, rejected take-off, ditching or other emergency.

2.2.13. Aeroplane systems

A description of the aeroplane systems, related controls and indications and operating instructions.

2.3. PART C: ROUTE AND AERODROME INSTRUCTIONS AND INFORMATION

Instructions and information relating to communications, navigation and aerodromes including minimum flight levels and altitudes for each route to be flown and operating minima for each aerodrome planned to be used, including -

(a) minimum flight level/altitude;

(b) operating minima for departure, destination and alternate aerodromes;

(c) instructions for determining aerodrome operating minima for instrument approaches using HUD and EVS;

(d) communication facilities and navigation aids;

(e) runway data and aerodrome facilities;

(f) approach, missed approach and departure procedures including noise abatement procedures;

(g) COM-failure procedures;

(h) search and rescue facilities in the area over which the aeroplane is to be flown;

(i) a description of the aeronautical charts that must be carried on board in relation to the type of flight and the route to be flown, including the method to check their validity;

(j) availability of aeronautical information and MET services;

(k) *en route* COM/NAV procedures including holding;

(l) aerodrome categorisation for flight crew competence qualification; and

(m) Instructions on the clarification and acceptance of ATC clearances, particularly where terrain clearance is involved.

2.4. PART D: TRAINING

(1) Training syllabi and checking programmes for all operations personnel assigned to operational duties in connection with the preparation and/or conduct of a flight.

(2) Training syllabi and checking programmes must include -

(a) for flight deck crew, all relevant items prescribed in Parts 61 and 63 and Subpart 3 of Part 121;

(b) for cabin crew, all relevant items prescribed in Part 64 and Subpart 3 of Part 121;

(c) for operations personnel concerned, including flight crew members -

(i) all relevant items prescribed in Part 92; and

(ii) all relevant items regarding operator security;

(d) operations personnel other than flight crew members and all relevant items pertaining to their duties as specified in TS 121.03.1.

(3) Procedures -

(a) for training and checking;

(b) to be applied in the event that personnel do not achieve or maintain the required standards; and

(c) to ensure that abnormal or emergency situations requiring the application of part or all of abnormal or emergency procedures and simulation of IMC by artificial means, are not simulated during commercial flights.

(4) Description of documentation to be stored and storage periods.

121.04.3 AIRCRAFT OPERATING MANUAL

1. Aeroplane operating manual contents

The Aeroplane Operating Manual required for compliance with this regulation shall be designed with human factors principles in mind and contain the following information for each type of aeroplane operated. Where there are significant differences in equipment and procedures between aeroplanes of the same type operated, the AOM shall show the registration mark of the aeroplane to which it is applicable -

(a) table of contents;

(b) list of effective pages;

(c) amending procedure;

(d) preamble;

(e) the normal, abnormal and emergency procedures relating to the aeroplane;

(f) details of the aeroplane system;

(g) the checklists and standard operating procedures to be used by the flight crew members; and

(h) the aeroplane performance data and limitations specified in the AFM. Such information shall be clearly identified as aeroplane flight manual data.

2. Standard operating procedures content

SOPs contain the detailed procedures to be followed by flight crew members in the conduct of aeroplane operations with particular emphasis on the interaction between crew members (crew resource management). SOPs shall not be contrary to any information or procedure included in the AFM. Required information, if contained in another publication carried on board the

aeroplane during flight, need not be repeated in the SOP. The SOP shall include, as a minimum, the following as applicable to the operation -

(a) communications;

(b) crew coordination;

(c) use of check lists;

(d) standard briefings;

(e) standard calls;

(f) ramp/gate procedures;

(g) battery/APU engine starts;

(h) taxi;

(i) rejected take-off;

(j) take-off and climb;

(k) cruise;

(l) descent;

(m) approaches IMC, visual, VFR, and circling;

(n) landing;

(o) missed approaches and balked landings procedures;

(p) stall recovery;

(q) fuelling with passengers on-board;

(r) use of on-board navigation and alerting aids;

(s) mass and balance control procedures;

(t) check lists;

(u) emergencies -

(i) planned and unplanned;

(ii) pilot incapacitation;

(iii) two-challenge rule;

(iv) bomb threat and hijacking;

(v) engine fire/failure/shutdown;

(vi) propeller over speed;

(vii) fire, internal/external;

(viii) smoke removal;

(ix) rapid decompression;

(x) flapless approach and landing;

(xi) any inadvertent encounter with moderated to severe in-flight icing;

(v) diagrams -

(i) normal take-off;

(ii) engine out take-off;

(iii) precision approach, all engines operating;

(iv) precision approach, engine out;

(v) non-precision approach, all engines operating;

(vi) non-precision approach, engine out;

(vii) go-around, all engines operating;

(viii) go-around, engine out;

(ix) VFR circuits;

(x) partial flaps/slats approach; and

(xi) flapless approach.

121.04.5 OPERATIONAL FLIGHT PLAN

1. Operational flight plan - General

(1) The operational flight plan (OFP) may be in any format at the air service operator's discretion: Provided the content meets the requirements of this TS.

(2) Based on the type of flight being undertaken, an operator shall prepare one of the following types of OFPs-

(a) for IFR flights, except as provided in sub-paragraph (b), a formal OFP containing all the items listed in section 2 of this TS;

(b) for VFR or IFR short positioning flights, a short-form 18-item OFP containing those items indicated by an asterisk in the list in section 2 of this TS; or

(c) for local test flights, flight tests, training or other non-commercial local flights where passengers are not carried, an informal OFP, being either an ATC flight plan or other

flight following document as appropriate to the flight. Documents developed as the result of this sub-paragraph shall also be retained in accordance with CAR 121.04.5(4).

2. Items in operational flight plan

(1) The minimum required content of an (OFP) is as follows but each field shall be considered as applicable to the type of flight, the type of aeroplane and the type of operational control system to which the OFP applies.

Note - *Asterisks by an item indicates information required for the OFP short form as provided in section 1(2) of this TS.*

(a) *air service operator's name;

(b) *date and ETD at points of departure and ETA at destinations;

(c) *aeroplane registration;

(d) *aeroplane tail number, as applicable;

(e) *aeroplane type and model and variant, as applicable;

(f) *flight number, as applicable;

(g) type of flight; IFR, VFR, EDTO, RVSM or other;

(h) *flight crew members names and assigned position;

(i) *flight operations officer's name, or PIC if pilot self-dispatch, as applicable;

(j) *number of cabin crew members and passengers on board, as amended by final load figures;

(k) *departure aerodrome;

(l) *destination aerodrome;

(m) *alternate aerodrome, as applicable, including en route alternates where required;

(n) routing to destination by successive navigational way points and a method to obtain associated tracks for each;

(o) routing to alternate aerodrome, as applicable;

(p) specification of any way points en route to satisfy special operations requirements (EDTO, etc.);

(q) *planned cruise altitudes to destination and alternate, as applicable and minimum safe altitudes along planned routes;

(r) planned cruise indicated air speed or Mach number, as applicable, true air speed and ground speed or wind component during cruise;

(s) winds at planned cruise altitude (expressed in terms of direction/velocity or as a component/drift angle);

(t) temperature at cruise altitude;

(u) *estimated time en route (if broken down into way point time components, a total shall be specified);

(v) time from destination to alternate, as applicable;

(w) distance to destination (if broken down into way point distance components, a total shall be specified);

(x) distance from destination to alternate, as applicable;

(y) *fuel burn en route and from destination to alternate;

(z) *fuel component breakdown required for the type of flight plan for, as applicable -

(i) taxi;

(ii) destination;

(iii) alternate;

(iv) holding reserve;

(v) en route reserve, as applicable;

(vi) contingency fuel, as applicable; and

(vii) the minimum and actual fuel on board at break release (entered by flight crew);

(aa) *mass and balance showing -

(i) total planned fuel on board;

(ii) zero fuel weight; and

(iii) planned maximum take-off weight and c of g location or trim position, as applicable; and

(bb) *signature of pilot-in-command and the flight operations officer (FOO), as applicable, or alternate means of certifying acceptance.

(2) The format of the full OFP shall allow the crew to record the fuel state and the progress of the flight relative to the plan. The OFP may be computer-generated or produced manually, working from charts and tables, by either the FOO or the flight crew. When an OFP is prepared manually, an approved form displaying the requisite information and providing the necessary space to make flight following entries as the flight progresses shall be used.

(3) The operator shall specify in its company operations manual how formal acceptance of the OFP by the PIC and the FOO shall be recorded.

121.04.7 RECORDS OF EMERGENCY AND SURVIVAL EQUIPMENT

1. Emergency and survival equipment list

The minimum information to be contained in an emergency and survival equipment list is prescribed in CAR 91.01.6.

121.04.8 TRAINING RECORDS

1. Training records

(1) An air service operator shall, for each person who is required to receive training in terms of Subpart 3 of this Part, establish and maintain a record of -

(a) a copy of a signed personnel licence or validation of foreign licence, if applicable;

(b) if applicable, a copy of the person's current medical certificate;

(c) the dates on which the person, while in the operator's employ, successfully completed any training, pilot proficiency check, examination or other crew member skills test required in terms of Subpart 3 of this Part, or obtained any qualification required in terms of NAMCAR Part 61, 63 or 64, or this NAMCATS;

(d) the report of any check or skills test completed;

(e) information relating to any failure of the person, while in the operator's employ, to successfully complete any training, pilot proficiency check or examination required in terms of Subpart 3 or to obtain any qualification required in terms of Part 61, 63 or 64, or this TS;

(f) the type of aircraft or flight training equipment used for any training, pilot proficiency check, line check, familiarisation flight, observation flight or qualification required under this Subpart; and

(g) any certificate required to be kept in terms of Subpart 3.

(2) An operator shall maintain a system for recording the qualifications and training of instructional and examining staff, as appropriate.

(3) An operator shall retain a copy of the most recent written examination completed by each person for each type of aircraft, where applicable, for which the person has a qualification.

(4) An operator shall retain the records referred to in paragraphs (1)(c) and (d) and a record of each pilot proficiency check for at least three years.

(5) An operator shall retain any certificate referred to in paragraph (1)(g) for at least 90 days beyond the duration of its validity period.

121.04.9 LOAD AND TRIM SHEET

1. Load and trim sheet

(1) The load and trim sheet must contain the following information -

(a) the aeroplane registration and type;

(b) the flight identification number and date;

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

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

(e) the dry operating mass and the corresponding CG of the aeroplane;

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

(g) the mass of consumables other than fuel;

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

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

(j) the load distribution;

(k) the applicable aeroplane CG positions; and

(l) the limiting mass and CG values.

(2) The person superintending the loading of an aeroplane must certify that the load distribution is in accordance with the requirements prescribed in the operations manual or flight manual and that the maximum certificated mass has not been exceeded.

(3) The load and trim sheet must be signed by the pilot-in-command unless the load and trim sheet is sent to the aeroplane by electronic data transfer. When the load and trim sheet is sent to the aeroplane by electronic data transfer, a copy of the final load and trim sheet, as accepted by the pilot-in-command, must be available on the ground.

121.05.14 FIRST AID, EMERGENCY MEDICAL AND UNIVERSAL PRECAUTION KITS

1. Standard first aid kit contents

The following items shall, as a minimum, be included in the current first aid kit -

(a) bandage, adhesive strips;

(b) bandage, gauze 7.5cm × 4.5;

(c) bandage, triangular 100cm folded and safety pins;

(d) burns dressing 10cm × 10cm;

(e) wound dressing, large and small;

(f) adhesive tape and scissors;

(g) small adhesive dressings;

(h) antiseptic swabs (10/pack);

(i) adhesive tape;

(j) sponge gauze;

(k) surgical mask;

(l) umbilical cord clamp;

(m) thermometer (non-mercury);

(n) basic or advanced life support cards;

(o) bag-valve mask;

(p) torch (flashlight) and batteries;

(q) pocket mask;

(r) first aid manual, current edition; and

(s) incident record form.

(t) **Note** - *The operator shall ensure that only Schedule 0 medication is included in the first aid kit.*

2. Medical kit contents

The following must be included in the emergency medical kit -

(1) Sphygmomanometer - non-mercury

(2) Stethoscope

(3) Syringes and needles

(4) Oropharyngeal airways (2 sizes)

(5) Tourniquet

(6) Coronary vasodilator, e.g. nitro-glycerine

(7) Anti-spasmodic, e.g. hyascene

(8) Epinephrine 1:1000

(9) Adrenocortical steroid, e.g. hydrocortisone

(10) Major analgesic, e.g. nalbuphine

(11) Diuretic, e.g. fursemide

(12) Antihistamine, e.g. diphenhydramine hydrochloride

(13) Sedative/anticonvulsant, e.g. diazpam

(14) Medication for Hypoglycaemia, e.g. hypertonic glucose

(15) Antiemetic, e.g. metoclopramide

(16) Atropine

(17) Digoxin

(18) Uterine contractant, e.g. Ergometrine/Oxytocin

(19) Disposable gloves

(20) Bronchial dilator - including an injectable form

(21) Needle disposal box

(22) Anti-spasmodic drugs

(23) Catheter

(24) A list of contents in at least 2 languages (English and one other). This must include information on the effects and side effects of drugs carried.

3. Universal precaution kit

(1) An owner or operator operating aircraft for which the maximum certificated passenger seating is 20 or more shall ensure each aircraft carries on board at least one universal precaution kits and two UPK for aircraft with maximum certificated seating configuration of more than 250 passengers.

(2) The following items shall, as a minimum, be included in a universal precaution kit -

(a) disposable gloves;

(b) dry powder that convert small liquid spill into sterile granulated gel;

(c) germicidal disinfectants for surface cleaning;

(d) skin wipes;

(e) face/eye mask;

(f) large absorbent towel;

(g) pick-up scoop with scraper; and

(h) bio-hazard disposal waste bag.

121.05.18 FLIGHT RECORDERS

1. Flight recorders - General

(1) Flight recorders comprise four systems -

(a) a flight data recorder (FDR);

(b) a cockpit voice recorder (CVR);

(c) an airborne image recorder (AIR); and

(d) a data link recorder (DLR).

(2) Lightweight flight recorders comprise four systems -

(a) an aircraft data recording system (ADRS);

(b) a cockpit audio recording system (CARS);

(c) an airborne image recording system (AIRS); and

(d) a data link recording system (DLRS).

Note - *Image and data link information may be recorded on either the CVR, FDR, CARS or the ADRS.*

(3) FDR, CVR, AIRS and DLRS performance requirements and industry crashworthiness and fire protection specifications are as contained in the EUROCAE ED-112, Minimum Operational Performance Specification (MOPS) for Crash Protected Airborne Recorder Systems, or equivalent documents.

(4) ADRS and CARS performance requirements and industry crashworthiness and fire protection specifications are as contained in the EUROCAE ED-155, Minimum Operational Performance Specification (MOPS) for Lightweight Flight Recorder Systems, or equivalent documents.

2. Inspections of flight recorders

(1) Prior to the first flight of the day, the built-in test features on the flight deck for the CVR, FDR and Flight Data Acquisition Unit (FDAU), when installed, shall be monitored.

(2) Annual inspections shall be carried out as follows -

(a) the read-out of the recorded data from the FDR and CVR should confirm that the recorder operates correctly for the nominal duration of the recording;

(b) the analysis of the FDR should evaluate the quality of the recorded data to determine whether the bit error rate is within acceptable limits and to determine the nature and distribution of the errors;

(c) a complete flight from the FDR should be examined in engineering units to evaluate the validity of all recorded parameters. Particular attention should be given to parameters from sensors dedicated to the FDR. Parameters taken from the aircraft's

electrical bus system need not be checked if their serviceability can be detected by other aircraft systems;

(d) the read-out facility should have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals;

(e) an annual examination of the recorded signal on the CVR should be carried out by re-play of the CVR recording. While installed in the aircraft, the CVR should record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards; and

(f) where practicable, during the annual examination, a sample of in-flight recordings of the CVR should be examined for evidence that the intelligibility of the signal is acceptable.

(3) The results of the annual inspections shall be recorded and retained for a period of five years calculated from the date of such check.

(4) Flight recorder systems should be considered unserviceable if there is a significant period of poor quality data, unintelligible signals or if one or more of the mandatory parameters is not recorded correctly.

(5) When requested, a report of the annual inspection should be made available to the Executive Director for monitoring purposes.

(6) Calibration of the FDR-system -

(a) for those parameters which have sensors dedicated only to the FDR and are not checked by other means, recalibration shall be carried out at least every five years or in accordance with the recommendations of the sensor manufacturer, to determine any discrepancies in the engineering conversion routines for the mandatory parameters and to ensure that parameters are being recorded within the calibration tolerances;

(b) when the parameters of altitude and airspeed are provided by sensors that are dedicated to the FDR system, there shall be a recalibration performed as recommended by the sensor manufacturer, or at least every two years; and

(c) should it be evident during and FDR download that a parameter was not recorded or an error occurred on a particular parameter or sensor, the error shall be rectified as per the maintenance manual. The FDR should be in operation for a maximum of three flights and downloads performed to verify the error has been rectified.

3. Flight recorder specifications

(1) Digital flight recorders shall comply with one of the following specifications as applicable -

(a) ARINC 542A;

(b) ARINC 573-717;

(c) ARINC 717; or

(d) ICAO Annex 6, Part I, Appendix 8.

(2) Flight data recorder shall be non-deployable container or automatic deployable container.

(a) the following requirements shall apply with effect from 1 January 2023:

(i) non deployable flight recorder containers shall be painted a distinctive orange colour;

(ii) non-deployable crash-protected flight recorder containers shall:

(aa) carry reflective material to facilitate their location; and

(bb) have securely attached an automatically activated underwater locating device operating at a frequency of 37.5KHz, this device shall operate for a minimum of 90 days.

(b) automatic deployable flight recorder containers shall:

(i) be painted a distinctive orange colour, however the surface visible from outside an aircraft may be of another colour;

(ii) carry reflective material to facilitate their location; and

(iii) have an integrated automatically activated ELT.

(c) installation of the flight recorder

(i) the probability of damage to the recordings is minimised;

(ii) there is an aural or visual means for pre-flight checking that the flight recorder systems are operating properly;

(iii) if the flight recorder systems have an erasure device, the installation shall be designed to prevent operation of the device during flight time or crash impact;

(iv) an aeroplane for which the individual certificate of airworthiness is first issued on or after 1 January 2023, a flight crew-operated erase function shall be provided on the flight deck which, when activated, modifies the recording of a CVR and AIR so that it cannot be retrieved using normal replay or copying techniques. The installation shall be designed to prevent activation during flight. In addition, the probability of inadvertent activation of an erase function during an accident shall also be minimised;

Note.- The erase function is intended to prevent access to CVR and AIR recordings by normal replay or copying means, but shall not prevent accident investigation authorities access to such recordings by specialised replay or copying techniques.

(v) the flight recorder systems shall be installed so that they receive electrical power from a bus that provides the maximum reliability for operation of the flight recorder systems without jeopardising service to essential or emergency loads;

(vi) the flight recorder systems, when tested by methods approved by the appropriate certificating authority, shall be demonstrated to be suitable for the environmental extremes over which they are designed to operate; and

(vii) means shall be provided for an accurate time correlation between the flight recorder systems recordings.

(3) A manufacturer shall provide the appropriate certificating authority with the following information in respect of the flight recorder systems:

(a) manufacturer's operating instructions, equipment limitations and installation procedures;

(b) parameter origin or source and equations which relate counts to units of measurement; and

(c) manufacturer's test reports or reports from a service provider.

4. An aeroplane for which flight data recorders are required

An operator shall ensure any aeroplane operated in a commercial air transport operation is equipped with an FDR in accordance with the following table -

TABLE A1

AEROPLANE AGE AND REQUIREMENTS

The weight of the aircraft (take-off mass)		Age of Aircraft	Parameters to be recorded by FDR
1	5700kg or Less	All turbine engine aeroplanes for which the individual Certificate of airworthiness is first issued on or after 01 Jan 2016.	(a) At least the first 16 parameters in the table in subsection 5 (10) (b)A class C AIR or AIRS which shall record at least the flight path and speed parameters displayed to the subsection 5 (10) or (c) An ADRS which shall record at least the first 7 parameters listed in the table in subsection 9
2	Over 27000kg	All aeroplanes for which the individual Certificate of airworthiness is first issued on or after 01 Jan 1989.	At least the first 32 parameters in the table in subsection 5 (10)

The weight of the aircraft (take-off mass)		Age of Aircraft	Parameters to be recorded by FDR
3	Over 2700kg up to and including 5700kg	All aeroplanes for which the individual Certificate of airworthiness is first issued on or after 01 Jan 1989.	At least the first 16 parameters in the table in subsection 5 (10)
4	5 700kg or less	All multi-engine turbine engine aeroplanes for which individual certificate of airworthiness first issued on or after 01 January 1990	At least the first 16 parameters in the table in subsection 5 (10)
5	Maximum 5 700kg	All multi-engine aircraft for which individual airworthiness certificate is first issued on or after 01 January 1990	At least the first 16 parameters in the table in subsection 5 (10)
6	Over 5700kg	All turbine-engined aeroplanes, for which the individual certificate of airworthiness was first issued before 01 January 1989,with a maximum certificated take-off mass of over 5700 kg, except those mentioned in item no 7 on this table	At least the first 5 parameters in the table in subsection 5 (10)
7	Over 5700kg	All turbine engine aeroplanes, for which the individual certificate of airworthiness was first issued on or after 01 January 1987 but before 01 January 1989. Except those mentioned on item no 7 in this table	At least the first 9 parameters in the table in subsection 5 (10)
8	Over 27000kg	Individual certificate of airworthiness first issued on or after 01 January 1987 but before 01 January 1989 types of which the prototype was certified by the appropriate authority after 30 September 1969	At least the first 16 parameters in the table in subsection 5 (10)

The weight of the aircraft (take-off mass)		Age of Aircraft	Parameters to be recorded by FDR
9	Over 27000kg	All turbine engine aeroplanes for which the individual certificate of airworthiness was first issued before 01 Jan 1987 but the prototype was certified by the appropriate authority after 30 September 1969	At least the first 05 parameters listed in the table in subsection 5(10) And meet the objectives of (a) The attitude of the aeroplane in achieving its flight path; and (b) The basic forces acting upon the aeroplane resulting in the achieved flight path and the origin of such basic forces.
10	Over 5700kg	First individual airworthiness certificate issued on or after 01 January 2005	Record at least the first 78 parameters listed in the table in subsection 5(10)
11	Over 5700kg	All aeroplanes with a mass of over 5700kg Take Off Mass of which application for type certification is submitted to the contracting state on or after 1 January 2023	At least the first 82 parameters in the table in subsection 5(10)

5. FDR Parameters

(1) A Type IA FDR shall be capable of recording, as appropriate to the aeroplane, at least the 78 parameters in the table in paragraph (10).

(2) A Type I FDR shall be capable of recording, as appropriate to the aeroplane, at least the first 32 parameters in the table in paragraph (10).

(3) Type II and IIA FDRs shall be capable of recording, as appropriate to the aeroplane, at least the first 16 parameters in the table in paragraph (10). In addition, a Type IIA FDR shall retain sufficient information from the preceding take-off for calibration purposes.

(4) The parameters that satisfy the requirements for FDRs are listed in the paragraphs below. The number of parameters to be recorded shall depend on aeroplane complexity. The parameters without an asterisk (*) are mandatory parameters which shall be recorded regardless of aeroplane complexity. In addition, the parameters designated by an asterisk (*) shall be recorded if an information data source for the parameter is used by aeroplane systems or the flight crew to operate the aeroplane. However, other parameters may be substituted with due regard to the aeroplane type and the characteristics of the recording equipment.

(5) The measurement range, recording interval and accuracy of parameters on installed FDR equipment shall meet the specifications in the following Table.

TABLE B1

PARAMETERS FOR AEROPLANE FLIGHT DATA RECORDERS

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR read-out)	Recording resolution
1	Time (UTC when available, otherwise relative time count or GNSS time sync)		24 hours	4	±0.125%/h	1s
2	Pressure-altitude		–300 m (–1 000 ft) to maximum certificated altitude of aircraft +1 500 m (+5 000 ft)	1	±30 m to ±200 m (±100 ft to ±700 ft)	1.5 m (5 ft)
3	Indicated airspeed or calibrated airspeed		95 km/h (50 kt) to max V_{so} *(note 1)* V_{so} to 1.2 V_D *(note 2)*	1	±5% ±3%	1 kt (0.5 kt recommended)
4	Heading (primary flight crew reference)		360°	1	±2°	0.5°
5	Normal acceleration *Note 8*	Application for type certification is submitted to a Contracting State before 1 January 2016 Application for type certification is submitted to a Contracting State on or after 1 January 2016	–3 g to +6 g –3 g to +6 g	0.125 0.0625	±1% of maximum range excluding datum error of ±5% ±1% of maximum range excluding datum error of ±5%	0.004 g 0.004 g
6	Pitch attitude		±75° or usable range whichever is greater	0.25	±2°	0.5°
7	Roll attitude		±180°	0.25	±2°	0.5°
8	Radio transmission keying		On-off (one discrete)	1		
9	Power on each engine *Note 3*		Full range	1 (per engine)	±2%	0.2% of full range or the resolution required to

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR read-out)	Recording resolution
						operate the aircraft
10*	Trailing edge flap and cockpit control selection		Full range or each discrete position	2	±5% or as pilot's indicator	0.5% of full range or the resolution required to operate the aircraft
11*	Leading edge flap and cockpit control selection		Full range or each discrete position	2	±5% or as pilot's indicator	0.5% of full range or the resolution required to operate the aircraft
12*	Thrust reverser position		Stowed, in transit, &reverse		1 (per engine)	
13*	Ground spoiler/speed brake selection (selection and position)		Full range or each discrete position	1	±2% unless higher accuracy uniquely required	0.2% of full range
14	Outside air temperature		Sensor range	2	±2°C	0.3°C
15*	Autopilot/auto throttle/AFCS mode and engagement status		A suitable combination of discretes	1		
16	Longitudinal acceleration *Note 8*	Application for type certification submitted to a Contracting State before 1 January 2016	±1 g	0.25	±0.015 g excluding a datum error of ±0.05 g	0.004 g
		Application for type certification submitted to a Contracting State on or after 1 January 2016	±1 g	0.0625	±0.015 g excluding a datum error of ±0.05 g	0.004 g
17	Lateral acceleration *Note 8*	Application for type certification submitted to a Contracting State before 1 January 2016	±1 g	0.25	±0.015 g excluding a datum error of ±0.05 g	0.004

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR read-out)	Recording resolution
		Application for type certification submitted to a Contracting State on or after 1 January 2016	±1 g	0.0625	±0.015 g excluding a datum error of ±0.05 g	0.004 g
18	Pilot input and/or control surface position-primary controls (pitch, roll, yaw) *notes 4 & 8*	Application for type certification submitted to a Contracting State before 1 January 2016	Full range	0.25	±2° unless higher accuracy uniquely required	0.2% of full range or as installed
		Application for type certification submitted to a Contracting State on or after 1 January 2016	Full range	0.125	±2° unless higher accuracy uniquely required	0.2% of full range or as installed
19	Pitch trim position		Full range	1	±3% unless higher accuracy uniquely required	0.3% of full range or as installed
20*	Radio altitude		–6 m to 750 m (–20 ft to 2 500 ft)	1	±0.6 m (±2 ft) or ±3% whichever is greater below 150 m (500 ft) and ±5% above 150 m (500 ft)	0.3 m (1 ft) below 150 m (500 ft) 0.3 m (1 ft) + 0.5% of full range above 150 m (500 ft)
21*	Vertical beam deviation (ILS/GNSS/GLS glide path, MLS elevation, IRNAV/IAN vertical deviation)		Signal range	1	±3%	0.3% of full range
22*	Horizontal beam deviation (ILS/GNSS/GLS localizer, MLS azimuth, IRNAV/IAN lateral deviation)		Signal range	1	±3%	0.3% of full range

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR read-out)	Recording resolution
23	Marker beacon passage		Discrete	1		
24	Master warning		Discrete	1		
25	Each NAV receiver frequency Selection *note 5*		Full range	4	As installed	
26*	DME 1 and 2 distance (includes Distance to runway threshold (GLS) and Distance to missed approach point (IRNAV/IAN)) *notes 5 & 6*		0 – 370 km (0 – 200 NM)	4	As installed	1 852 m (1 NM)
27	Air/ground status		Discrete	1		
28*	GPWS/TAWS/GCAS status (selection of terrain display mode including pop-up display status) and (terrain alerts, both cautions and warnings, and advisories) and (on/off switch position)		Discrete	1		
29*	Angle of attack		Full range	0.5	As installed	0.3 % of full range
30*	Hydraulics, each system (low pressure)		Discrete	2		0.5% of full range
31*	Navigation data (latitude/longitude, ground speed, and drift angle) *note 7*		As installed	1	As installed	
32*	Landing gear and gear selector position		Discrete	4	As installed	
33*	Groundspeed		As installed	1	Data shall be obtained from the most accurate system	1 kt
34	Brakes (left and right brake pressure, left and right brake pedal position)		(Maximum metered brake range, discretes or full range)	1	±5%	2% of full range
35*	Additional engine parameters (EPR, N_1, indicated vibration level, N_2, EGT, fuel	Engine fuel metering valve position:	As installed	Each engine each second	As installed	2% of full range

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR read-out)	Recording resolution
	flow, fuel cut-off lever position, N_3, engine fuel metering valve position)	Application for type certification is submitted to a Contracting State on or after 1 January 2023				
36*	TCAS/ACAS (traffic alert and collision avoidance system)		Discretes	1	As installed	
37*	Wind shear warning		Discrete	1	As installed	
38*	Selected barometric setting (pilot, co-pilot)		As installed	64	As installed	0.1 mb (0.01 in-Hg)
39*	Selected altitude (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
40*	Selected speed (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
41*	Selected Mach (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
42*	Selected vertical speed (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
43*	Selected heading (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
44*	Selected flight path (all pilot selectable modes of operation) (course/DSTRK, path angle, final approach path (IRNAV/IAN))			1	As installed	
45*	Selected decision height		As installed	64	As installed	Sufficient to determine crew selection
46*	EFIS display format (pilot, co-pilot)		Discrete(s)	4	As installed	
47*	Multi-function/engine/alerts display format		Discrete(s)	4	As installed	
48*	AC electrical bus status		Discrete(s)	4	As installed	

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR read-out)	Recording resolution
49*	DC electrical bus status		Discrete(s)	4	As installed	
50*	Engine bleed valve position		Discrete(s)	4	As installed	
51*	APU bleed valve position		Discrete(s)	4	As installed	
52*	Computer failure		Discrete(s)	4	As installed	
53*	Engine thrust command		As installed	2	As installed	
54*	Engine thrust target		As installed	4	As installed	2% of full range
55*	Computed centre of gravity		As installed	64	As installed	1% of full range
56*	Fuel quantity in CG trim tank		As installed	64	As installed	1% of full range
57*	Head up display in use		As installed	4	As installed	
58*	Para visual display on/off		As installed	1	As installed	
59*	Operational stall protection, stick shaker and pusher activation		As installed	1	As installed	
60*	Primary navigation system reference (GNSS, INS, VOR/DME, MLS, Loran C, localizer glideslope)		As installed	4	As installed	
61*	Ice detection		As installed	4	As installed	
62*	Engine warning each engine vibration		As installed	1	As installed	
63*	Engine warning each engine over temperature		As installed	1	As installed	
64*	Engine warning each engine oil pressure low		As installed	1	As installed	
65*	Engine warning each engine over speed		As installed	1	As installed	
66*	Yaw trim surface position		Full range	2	±3% unless higher accuracy uniquely required	0.3% of full range
67*	Roll trim surface position		Full range	2	±3% unless higher accuracy uniquely required	0.3% of full range

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR read-out)	Recording resolution
68*	Yaw or sideslip angle		Full range	1	±5%	0.5°
69*	De-icing and/or anti-icing systems selection		Discrete(s)	4		
70*	Hydraulic pressure (each system)		Full range	2	±5%	100 psi
71*	Loss of cabin pressure		Discrete	1		
72*	Cockpit trim control input position, Pitch		Full range	1	±5%	0.2% of full range or as installed
73*	Cockpit trim control input position, Roll		Full range	1	±5%	0.2% of full range or as installed
74*	Cockpit trim control input position, Yaw		Full range	1	±5%	0.2% of full range or as installed
75*	All cockpit flight control input forces (control wheel, control column, rudder pedal)		Full range (±311 N (±70 lbf), ± 378 N (±85 lbf), ± 734 N (±165 lbf))	1	±5%	0.2% of full range or as installed
76*	Event marker		Discrete	1		
77*	Date		365 days	64		
78*	ANP or EPE or EPU		As installed	4	As installed	
79*	Cabin pressure altitude	Application for type certification submitted to a Contracting State on or after 1 January 2023	As installed (0 ft to 40 000 ft recommended)	1	As installed	100 ft
80*	Aeroplane computed weight	Application for type certification submitted to a Contracting State on or after 1 January 2023	As installed	64	As installed	1% of full range
81*	Flight director command	Application for type certification submitted to a Contracting State on or	Full range	1	± 2°	0.5°

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR read-out)	Recording resolution
		after 1 January 2023				
82*	Vertical speed	Application for type certification submitted to a Contracting State on or after 1 January 2023	As installed	0.25	As installed (32 ft/min recommended)	16 ft/min

Notes.—

1. V_{SO} stalling speed or minimum steady flight speed in the landing configuration is in Section "Abbreviations and Symbols".

2. V_D design diving speed.

3. Record sufficient inputs to determine power.

4. For aeroplanes with control systems in which movement of a control surface shall back drive the pilot's control, ''or'' applies. For aeroplanes with control systems in which movement of a control surface shall not back drive the pilot's control, ''and'' applies. In aeroplanes with split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately. In aeroplanes with independent pilot input on primary controls, each pilot input on primary controls needs to be recorded separately.

5. If signal available in digital form.

6. Recording of latitude and longitude from INS or other navigation system is a preferred alternative.

7. If signals readily available.

8. It is not intended that aeroplanes issued with an individual certificate of airworthiness before 1 January 2016 be modified to meet the measurement range, maximum sampling and recording interval, accuracy limits or recording resolution description detailed in this Part.

9. The number of parameters to be recorded shall depend on aeroplane complexity. The parameters without an asterisk (*) are mandatory parameters which shall be recorded regardless of aeroplane complexity.

6. Aeroplane for which voice or aural recorder is required

Notes –

i. CVR performance requirements are as contained in EUROCAE ED-112, Minimum Operational Performance Specification (MOPS) document for Flight Recorder Systems of the European Organisation for Civil Aviation Equipment (AEROCAE) for Crash Protected Airborne Recorder Systems, or equivalent documents.

ii. CARS performance requirements are as contained in the EUROCAE ED-155 MOPS for Lightweight Flight Recorder Systems, or equivalent documents.

(1) An operator shall ensure any aeroplane used to operate a commercial air transport operation is equipped with a CVR or CaRS capable of recording the aural environment of the flight deck during flight time in accordance with the following table:

TABLE B2

CRITERIA FOR CVR AND CARS REQUIREMENTS

Group See note 1.	Conditions See note 2.	Maximum Certificated Take-Off Mass (kg	Propulsion System	Recording retained for the last 30 minutes of operation	Recording retained for the last 2 hours of operation	Recording retained for at least the last 25 hours of operation
1	Application for type certification submitted to Contracting State on or after 1 January 2016 and required to be operated by more than one pilot	>2250 but ≤ 5700	Turbine		X	
2	Individual certificate of airworthiness first issued on or after 1 January 2003	>8618	All		X	
3	Individual certificate of airworthiness first issued on or after 1 January 1987	>8618	All		X	
4	Individual certificate of airworthiness first issued before 1 January 1987 whose types of which the prototype was certificated by the appropriate national authority after 30 September 1969	>8618 and < 27000	Turbine		X	

5	Individual certificate of airworthiness is first issued on or after 1 January 2022	> 27000	All			X

Notes-

1. *Group 1 shall be either a CVR or a CARS. Group 2, 3 and 4 recorders shall be CVRs.*

2. *For the purposes of this technical standard, any reference to the application for the type certification being submitted to a Contracting State on or after a specified date means the date an application is made for a new aircraft type, not the date of certification of particular aircraft variants or derivative models. Any reference to the individual certificate of airworthiness being issued first on or after a specified date means the first time a certificate of airworthiness is issued for a new individual aircraft serial number that has just come off the assembly line.*

(2) Any recorder required to be installed shall have an independent power source with the capability of automatically engaging and providing ten minutes of operation whenever aircraft power to the recorder ceases, either by normal shutdown or by any other loss of power to the recorder.

(3) For all aeroplanes for which the type certificate is first issued on or after 1 January 2016 and which are required to be fitted with a CVR, the CVR shall be provided with an independent power source that shall power exclusively the CVR and the cockpit area microphone components. In installations where two CVRs are fitted in aeroplanes, the forward CVR shall be provided with an independent power source.

Note - *When the CVR function is combined with other recording functions within the same unit, powering the other functions is allowed.*

(4) For all aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2016 and which are required to be fitted with a CVR, the CVR shall be provided with an independent power source. In installations where two CVRs are fitted in aeroplanes, the forward CVR shall be provided with an independent power source.

(5) The CVR shall record on four separate channels, or more, at least the following -

(a) voice communication transmitted from or received in the aeroplane by radio;

(b) aural environment on the flight deck;

(c) voice communication of flight crew members on the flight deck using the aeroplane's interphone system, if installed;

(d) voice or audio signals identifying navigation or approach aids introduced in the headset or speaker; and

(e) voice communication of flight crew members using the passenger address system, if installed.

(6) The CARS shall record on two separate channels, or more, at least the following -

(a) voice communication transmitted from or received in the aeroplane by radio;

(b) aural environment on the flight deck; and

(c) voice communication of flight crew members on the flight deck using the aeroplane's interphone system, if installed.

(7) The CVR shall be capable of recording on at least four channels simultaneously. On a tape-based CVR, to ensure accurate time correlation between channels, the CVR is to record in an in-line format. If a bi-directional configuration is used, the in-line format and channel allocation shall be retained in both directions.

(8) The preferred track channel allocation is shall be as follows -

(a) Channel 1 - co-pilot headphones and live boom microphone;

(b) Channel 2 - pilot headphones and live boom microphone;

(c) Channel 3 - area microphone; and

(d) Channel 4 - time reference plus the third and fourth crew members' headphone and live microphone, if applicable.

Notes -

1. Channel 1 is to be located closest to the base of the recording head.

2. The preferred channel allocation presumes use of current conventional magnetic tape transport mechanisms and is specified because the outer edges of the tape have a higher risk of damage than the middle. It is not intended to preclude use of alternative recording media where such constraints may not apply.

(9) An aeroplane that is required to be equipped with CARS, and for which the individual certificate of airworthiness is first issued on or after 1 January 2025, shall be equipped with a CARS which shall retain the information recorded during at least the last two hours of its operation.

(10) An aeroplane for which the individual certificate of airworthiness was first issued before 1 January 2016, that is required to carry a CVR and is modified on or after 1 January 2016 to use any of the data link communications applications prescribed in Document NAM-CATS-OPS 121 shall record the data link communications messages on a crash-protected flight recorder.

7. Combination recorders

(1) All aeroplanes of a maximum certificated take-off mass of over 15 000kg for which the type certificate is first issued on or after 1 January 2016 and which are required to be

equipped with both a CVR and an FDR, shall be equipped with two combination recorders (FDR/CVR).

(2) Aeroplanes fitted with combination flight data and aural recorders shall, as far as practicable, locate one recorder close to the cockpit and the other as far aft as possible.

8. Airborne image recorder

(1) Airborne image recorders (AIR) are classified as follows -

(a) a Class A AIR captures the general cockpit area in order to provide data supplemental to conventional flight recorders;

Note - *To respect crew privacy, the cockpit area view may be designed as far as practical to exclude the head and shoulders of crew members whilst seated in their normal operating position.*

(b) a Class B AIR captures data link message displays; and

(c) a Class C AIR captures instruments and control panels.

Note - *A Class C AIR may be considered as a means for recording flight data where it is not practical or is prohibitively expensive to record on an FDR or where an FDR is not required.*

(2) For aeroplanes equipped with an AIR, the AIR shall start to record prior to the aeroplane moving under its own power and record continuously until the termination of the flight when the aeroplane is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the AIR must start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight.

9. Aircraft data recording systems

(1) An operator of aircraft using aircraft data recording systems (ADRS) shall ensure the ADRS is capable of recording, as appropriate to the aeroplane, at least the essential (E) parameters in the following Table.

TABLE C1

PARAMETER GUIDANCE CHARACTERISTICS FOR AIRCRAFT DATA RECORDING SYSTEMS

N°	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
1	Heading: a) Heading (Magnetic or True)	±180° ±300°/s	1 0.25	±2°	0.5° 2°/s	*Heading is preferred, if not available, yaw rate shall be recorded

N°	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
	b) Yaw rate			±1% + drift of 360°/h		
2	Pitch: A) Pitch attitude b) Pitch rate	±90° ±300°/s	0.25 0.25	±2° ±1% + drift of 360°/h	0.5° 2°/s	*Pitch attitude is preferred, if not available, pitch rate shall be recorded
3	Roll: (a)Roll attitude (b) Roll rate	±180° ±300°/s	0.25 0.25	±2° ±1% + drift of 360°/h	0.5° 2°/s	*Roll attitude is preferred, if not available, roll rate shall be recorded
4	Positioning system (a)Time (b)Latitude/Longitude (c) Altitude (d) Ground speed (e)Track (f) Estimate error	24 hours Lattitude: ±90° Longitude: ±180° –300 m (–1 000 ft) to maximum certificated altitude of aircraft +1 500 m (5 000 ft) 0-1 000 kt 0-360° Available range	1 2 (if available) 2 (if available) 2 (if available) 2 (if available) 2 (if available)	±0.5s As installed (0.00015° recommended) As installed (±15 m (±50 ft) recommended) As installed (±5 kt recommended) As installed (±2° recommended) As installed	0.1 0.00005° 1.5m (5 ft) 1 kt 0.5° As installed	UCT time preferred where available Shall be recorded if readily available
5	Normal acceleration	–3 g to + 6g	0.25 (0.125 if available)	As installed (±0.09 g excluding a datum error of ±0.045 g recommended)	0.004 g	

N°	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
6	Longitudinal acceleration	±1 g(*)	0.25 (0.125 if available)	As installed (±0.015 g excluding a datum error of ±0.05 g recommended)	0.004 g	
7	Lateral acceleration	±1 g(*)	0.25 (0.125 if available)	As installed (±0.015 g excluding a datum error of ±0.05 g recommended)	0.004 g	
8	External static pressure (or pressure altitude)	34.4 mb (3.44 in-Hg) to 310.2 mb (31.02 in-Hg) or available sensor range	1	As installed (±1 mb (0.1 in-Hg) or ±30 m (±100 ft) to ±210 m (±700 ft) recommended)	0.1 mb (0.01 in-Hg) or 1.5 m (5 ft)	
9	Outside air temperature (or total air temperature)	–50° to +90°C or available sensor range	2	As installed (±2°C recommended)	1°C	
10	Indicated air speed	As the installed pilot display measuring system or available sensor range	1	As installed (±3% recommended)	1 kt (0.5 kt recommended)	
11	Engine RPM (*)	Full range including overspeed condition	Each engine each second	As installed	0.2% of full range	
12	Engine oil pressure	Full range	Each engine each second	As installed (5% of full range recommended)	2% of full range	
13	Engine oil temperature	Full range	Each engine each second	As installed (5% of full range recommended)	2% of full range	
14	Fuel flow or pressure	Full range	Each engine each second	As installed	2% of full range	
15	Manifold pressure	Full range	Each engine each second	As installed	0.2% of full range	
16	Engine thrust/power/ torque parameters required to determine propulsive thrust/power*	Full range	Each engine each second	As installed	0.1% of full range	* Sufficient parameters e.g. EPR/N1 or torque/Np as appropriate to the particular engine shall be recorded to determine power in both normal and

N°	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
						reverse thrust. A margin for possible overspeed shall be provided
17	Engine gas generator speed (Ng)	0–150%	Each engine each second	As installed	0.2% of full range	
18	Free power turbine speed (Nf)	0–150%	Each engine each second	As installed	0.2% of full range	
19	Coolant temperature (*)	Full range	1	As installed (±5°C recommended	1°C	
20	Main voltage	Full range	Each engine each second	As installed	1 Volt	
21	Cylinder head temperature	Full range	Each cylinder each second	As installed	2% of full range	
22	Fuel quantity	Full range	4	As installed	1% of full range	
23	Primary flight control surface position	Full range	0.25	As installed	0.2% of full range	
24				As installed		
25	Exhaust gas temperature	Full range	Each engine each second	As installed	2% of full range	
26	Emergency voltage	Full range	Each engine each second	As installed	1 Volt	
27	Trim surface position	Full range or each discrete position	1	As installed	0.3% of full range	
28	Landing gear position	Each discrete position*	Each gear every two seconds	As installed		*Where available, record up-and-locked and down-and-locked position
29	Novel/unique aircraft features	As required	As required	As required	As required	

10. Flight recorder data recovery

(1) An aeroplane of a maximum certificated take-off weight of over 27 000 kg and authorized to carry more than 19 passengers for which the application of type certification is submitted to a Contracting State on or after 1 January 2021, shall be equipped with a means approved by the Executive Director, to recover flight recorder data and make it available in a timely manner.

(2) In approving the means to make flight recorder data available in a timely manner, the Executive Director shall take into account the following:

(a) the capabilities of the operator;

(b) overall capability of the aeroplane and its systems as certified by State of Design;

(c) the reliability of the means to recover the appropriate CVR channels and appropriate FDR data; and

(d) specific mitigation measures.

Note.- *Guidance on approving the means to make flight recorder data available in a timely manner is contained in the Manual on Location of Aircraft in Distress and Flight Recorder Data Recovery (Doc 10054).*

121.05.21 DATA LINK RECORDERS

1. Data link recorders - General

Notes -

1. *Data link communications are currently conducted by either ATN-based or FANS 1/A-equipped aircraft.*
2. *A Class B AIR could be a means for recording data link communications applications messages to and from the aeroplanes where it is not practical or is prohibitively expensive to record those data link communications applications messages on FDR or CVR.*
3. *Data link recorders performance requirements are as contained in the EUROCAE ED-112, Minimum Operational Performance Specifications (MOPS) for Crash Protected Airborne Recorder Systems, or equivalent documents.*

(1) The minimum recording duration of a data link recorder shall be equal to the duration of the CVR.

(2) Data link recording shall be able to be correlated to the recorded cockpit audio.

(3) Where the aircraft flight path is authorised or controlled through the use of data link messages, all data link messages, both uplinks (to the aircraft) and downlinks (from the aircraft), shall be recorded on the aircraft. As far as practicable, the time the messages were displayed to the flight crew and the time of the responses shall be recorded.

Note - *Sufficient information to derive the content of the data link communications message and the time the messages were displayed to the flight crew is needed to determine an accurate sequence of events on board the aircraft*.

(4) Messages applying to the applications listed in this subsection shall be recorded. Applications without the asterisk (*) are mandatory applications which shall be recorded regardless of the system complexity. Applications with an (*) shall be recorded only as far as is practicable given the architecture of the system -

Item No.	*Application Type*	*Application Description*	*Recording Content*
(a)	Data link initiation	This includes any applications used to log on to or initiate data C-link service. In future, this will include air navigation system (FANS-1/A) and the aeronautical telecommunication network (ATN). These are ATS facilities notification (AFN) and context management (CM) respectively	C
(b)	Controller pilot communication	This includes an application used to exchange requests, Communication clearances, instructions, and reports between the flight crew and controllers on the ground. In FANS-1/A and ATN, this includes the CPDLC application. It also includes applications used for the exchange of oceanic (OCL) and departure clearances DCL as well as data link delivery of taxi clearances.	C
(c)	Addressed surveillance	This includes any surveillance application in which the automatic dependent surveillances-contract (ADS-C) ground sets up contracts for delivery of surveillance data. In FANS-1/A and ATN, this includes the ADS-C application. Where parametric data are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.	C*
(d)	Flight information	This includes any service used for delivery of flight information to specific aircraft. This includes, for example, data link aviation weather report service (D-METAR), data link-automatic terminal service (D-ATIS), digital Notice to Airmen(D-NOTAM) and other textual data link services.	C
(e)	Aircraft broadcast surveillance	This includes elementary and enhanced surveillance systems, as well as automatic dependent surveillance - broadcast (ADS-B) output data. Where parametric data sent by the aeroplane are reported within the message	M*

		they shall be recorded unless data from the same source are recorded on the FDR.	
(f)	Aeronautical operational control data	shall include any application transmitting or receiving control data used for aeronautical operational control purposes.	M*

Notes:

Key:

C: means Complete contents recorded.

M: means information that enables correlation to any associated records stored separately from the aeroplane.

*: Applications to be recorded only as far as is practicable given the architecture of the system.

121.05.27 FIRE EXTINGUISHER

The requirements regarding the minimum performance requirements and the extinguishing agent of the fire extinguisher are as prescribed in TS 91.04.18.

121.06.2 APPLICATION FOR THE ISSUANCE OR AMENDMENT OF AN AIR OPERATOR CERTIFICATE AND OPERATIONS SPECIFICATIONS

1. Application for operating certificate

(1) The form and manner referred to in CAR 121.06.2 on which application is made for the issuance or amendment of an air operator certificate (AOC) or operations specifications is referred to in this TS as the certification process. This process is designed to address the following certification actions -

(a) initial certification of an air service operator in terms of this Part;

(b) revision to any existing AOC or operations specification issued in terms of this Part;

(c) corrective certification action of an existing AOC or operations specification where deficiencies have been discovered through the continuing safety oversight programme, or where appropriate; or

(d) any other certification action requested by an operator, operating or desiring to operate in terms of this Part.

(2) The process used to accomplish any certification activity entails the applicant successfully completing the five phases of certification. An application may not progress where any phase in not completed satisfactorily. On this issue an applicant is cautioned of the need to review any deficiencies as indicated in CAR 121.06.3(3). The five phases of certification are comprised of -

(a) the pre-application phase;

(b) the formal application phase;

(c) the documentation review phase;

(d) the demonstration and inspection phase; and

(e) the certification phase.

(3) As part of the certification process an applicant shall complete and submit the following as a minimum -

(a) a statement of compliance (SOC) document, which is the means by which the operator ensures him or herself and the Executive Director that the company will comply with all applicable regulatory requirements;

(b) a number of application forms, depending upon the type of authority being applied for, which are intended to provide evidence of qualification for the specific authorities requested. The number and type of forms required vary with the size, scope and complexity of the proposed operation and are at the discretion of the certification officer; however, all will be made available to the applicant;

(c) copies of all required manuals; and

(d) payment of the application fee required by CAR 121.06.2(1) shall be non-refundable unless otherwise approved by the Executive Director.

(4) The applicant must submit to any inquiry or investigation, referred to in CAR 121.06.3(1), as deemed necessary in support of the application and to the certification audit referred to in CAR 121.06.5(1).

(5) With respect to the SOC, for each operator or applicant -

(a) the SOC shall be in the form of a complete listing of all parts of the regulations, including technical standards, as applicable to the operation the applicant is proposing, with space for the applicant to show how each regulation applicable to him or her has been met through specific reference to the operator's operations, maintenance or other required manuals;

(b) the SOC shall be updated by operators to reflect amended regulatory requirements or if the references showing the means of compliance in the SOC change as a result of amendments to the operator's manuals; and

2. Required management positions

(1) An operator shall employ the management personnel required by CAR 121.06.2(5) on a full time basis to ensure proper control and supervision of its personnel and operation. Section 3 of this TS states the minimum qualifications and responsibilities of the incumbents.

(2) The application forms for the required managerial positions will be reviewed to ensure the minimum qualifications are met. The assessment process may involve the use of quizzes or interviews to establish the suitability of each nominee. Where a nominee is known within NCAA, the Executive Director may approve such nominee without the need for further assessment.

(3) An operator may use whatever title deemed necessary for its managers and may assign some of the responsibilities for a given position to another person or persons or the responsibilities of more than one position to one person; however, all the responsibilities noted in section 3 shall be assigned to a nominated manager and such assignment clearly identified in the operations manual. Furthermore, every person assigned any responsibility associated with a required position shall also meet the qualification requirements associated with the responsibilities assigned.

(4) An operator shall develop a method of ensuring that, in the absence of a responsible manager for any reason, all the responsibilities of that manager are assigned to another individual. Such individual shall meet the qualifications required for the responsibilities assigned except that the knowledge requirements may be demonstrated to the operator rather than the Executive Director. Any assignment issued for a period greater than 30 days must be acceptable to the Executive Director.

3. Approved positions, minimum qualifications and responsibilities

(1) Chief Executive Officer (CEO)

(a) Qualifications

The CEO shall not have had any conviction or administrative sanction under the Act or these Regulations which, in the view of the Executive Director, was sufficiently serious to render such person not fit and proper to exercise the responsibilities of such position.

(b) Responsibilities

The CEO shall -

(i) have full authority for all human resources;

(ii) have authority for major financial decisions;

(iii) have direct responsibility for the conduct of the company's affairs; and

(iv) have final responsibility for all safety and security issues.

(2) Person Responsible for Flight Operations (PRFO)

(a) Qualifications:

The PRFO shall, as a minimum -

(i) hold or have held the pilot licence and ratings appropriate to the aeroplanes being operated; or

(ii) demonstrate adequate knowledge of the operation of such aeroplanes; or

(iii) have acquired not less than 3 years supervisory experience in the flight operations department of an operator whose flight operations are similar in size and scope or acceptable alternative experience;

Notes -

1. *In determining similar size of flight operations, the grouping of operators is based upon the following categories -*

   (a) large aeroplanes having a maximum certificated passenger seating capacity of 20 or more up to and including 50; and

   (b) large aeroplanes having a maximum certificated passenger seating capacity of more than 50.

2. *The PRFO of an operator acquiring larger aeroplanes or increasing the complexity of its operations may continue in such position: Provided-*

   (a) the operator is not acquiring aeroplanes more than 1 category higher than presently operated; and

   (b) he or she becomes conversant with the new aeroplane or new operations, as applicable, within 3 months of the change.

3. *A PRFO leaving an operator to take a PRFO position with another operator having a fleet of larger aeroplanes may do so: Provided -*

   (a) the new operator does not operate aeroplanes more than 1 category higher than those with which the PRFO has experience;

   (b) he or she had at least 3 years experience as the PRFO of the operator having smaller aeroplanes; and

   (c) he or she demonstrates adequate knowledge of the aeroplanes and flight operations of the new operator prior to acting in the position.

(iv) demonstrate knowledge to the Executive Director of the content of the operations manual, the operator's certificate and operations specifications, as well as those provisions of the regulations and technical standards necessary to carry out his or her duties and responsibilities to ensure safety; and

(v) not have had any conviction or administrative sanction under the Act or the Regulations which, in the view of the Executive Director, was sufficiently

serious to render such person not fit and proper to exercise the responsibilities of such position.

(b) Responsibilities

The PRFO is responsible for safe flight operations, in particular -

(i) the control of operations and operational standards of all aeroplanes operated;

(ii) the identification of operations coordination functions which impact on operational control (e.g. maintenance, crew scheduling, load control, equipment scheduling);

(iii) the supervision, organisation, manning and efficiency of the following -

(aa) flight operations;

(bb) cabin safety;

(cc) crew scheduling and rostering; and

(dd) training programmes;

(iv) the timely resolution of safety issues;

(v) the contents of the operator's operations manual;

(vi) the supervision of and the production and amendment of the operations manual;

(vii) liaison with the regulatory authority on all matters concerning flight operations, including any variations to the operator's AOC;

(viii) liaison with any external agencies which may affect the operator's operations;

(ix) ensuring that the operator's operations are conducted in accordance with current regulations, standards and the operator's policy;

(x) ensuring that crew scheduling complies with flight and duty time regulations and that all crew members are kept informed of any changes to the regulations and standards;

(xi) the receipt and actioning of any aeronautical information affecting the safety of flight;

(xii) the dissemination of aeroplane safety information, both internal and external, in conjunction with the safety management system;

(xiii) the qualifications of flight and cabin crews; and

(xiv) the maintenance of a current operations library.

(xv) maintains the mass and balance records for all aircraft;

(xvi) completes all required reports and submits them to the operations manager for forwarding to the Authority; and

(xvii) management of all ground handling functions, including but not limited to the following:

(aa) passenger services;

(bb) baggage services;

(cc) cabin services;

(dd) weight and balance control

(ee) ground support equipment;

(ff) fuel services; and

(gg) ramp operations.

(3) Person Responsible for Aircraft (PRA)

(a) Qualifications

The PRA shall, as a minimum -

(i) have or have held an aircraft maintenance engineer (AME) licence, issued in terms of Part 66, or -

(aa) at least have training and experience that may qualify the individual to obtain an AME licence;

(bb) hold or have held a pilot licence and ratings appropriate to the aeroplanes being operated or demonstrate adequate knowledge of the maintenance of such aeroplanes; or

(cc) hold an engineering degree in aeronautics, electrical, mechanical or avionics or other studies relevant to aircraft maintenance with 5 years experience in the aviation domain after obtaining that qualification;

(ii) have at least two years experience in an executive position within aviation, or at least as a Quality Assurance Manager within the aviation domain;

(iii) have worked directly with the NCAA for at least one year and have not been the Quality Manager of the assigned maintenance organisation; and

(iv) not have had any conviction or administrative sanction under the Act or these Regulations which, in the view of the Executive Director, was sufficiently serious to render such person not fit and proper to exercise the responsibilities of such position.

(b) Responsibilities

The PRA is responsible for safe aeroplane operations, in particular -

(i) is responsible for all maintenance and inspection personnel;

(ii) ensures that company aircraft are maintained in an airworthy condition;

(iii) ensures that all inspections, repairs and component changes are accomplished in accordance with the manufacturer's approved procedures;

(iv) ensures compliance with maintenance procedures, airworthiness directives, service bulletins, service letters and the regulations;

(v) ensures all maintenance technicians are trained and current on the types of aircraft for which approved;

(vi) ensures that all maintenance technicians are certified and supervised according to the requirements specified in the regulations;

(vii) is responsible for the production and amendment of the policy and procedures manual;

(viii) coordinates with maintenance contracting agencies when maintenance activities are being performed on company aircraft;

(ix) provides the operations manager with the current airworthiness status of the aircraft and the forecast down times to facilitate maintenance scheduling and insure timely deferral or correction of aircraft discrepancies;

(x) maintains a close liaison with manufacturer's representatives, parts supply houses, repair facilities and the NCAA;

(xi) makes available to maintenance personnel the necessary overhaul manuals, service bulletins, service letters, airworthiness directives, applicable sections of the MCM/MPM and any other required technical data;

(xii) maintains all necessary work records and logbooks, including certification in the aircraft permanent maintenance records that the aircraft is approved for return to service;

(5) Chief Pilot

Note - *Where an operator appoints a chief pilot for each aeroplane type operated, it must name one person in its operations manual who is responsible for the overall flight standards of the operator's aeroplane fleet. Notwithstanding, the qualifications and responsibilities stipulated below shall apply to all chief pilots*.

(a) Qualifications

The chief pilot shall, as a minimum -

(i) hold a valid ATPL, a valid multi-engine aeroplane instrument rating and a type rating for at least one of the types of aeroplanes operated;

(ii) have at least 3 years aeroplane experience as pilot-in-command of a multi-engine aeroplane of a type operated by the operator and in the type of operations contemplated (domestic, international, cargo, passenger);

(iii) be qualified for line flying on one of the types of aeroplanes operated;

(iv) demonstrate knowledge to the Executive Director with respect to the content of the operations manual, training manuals, AOMs, DFE programme, if DFEs are to be employed, and the provisions of the regulations and technical standards necessary to carry out the duties and responsibilities of the position; and

(v) the chief pilot shall not have had any conviction under the Act.

(b) Responsibilities

The chief pilot is responsible for the professional standards of the flight crews under his/her authority, and in particular-

(i) developing standard operating procedures for inclusion in the AOM;

(ii) developing and/or implementing all required approved training programmes for the operator's flight crews;

(iii) issuing directives and notices to the flight crews as required;

(iv) the operational suitability and requirements of all aerodromes and routes served by the operator;

(v) the processing and actioning of any flight crew reports;

(vi) the supervision of flight crews; and

(vii) assuming any responsibilities delegated by the PRFO.

(6) Cabin Crew Manager

Note - *Required only for an operator authorised to carry passengers in terms of this Part*.

(a) Qualifications

The cabin crew manager shall, as a minimum -

(i) hold a valid cabin crew member licence valid for at least one of the aeroplanes being operated;

(ii) know the contents of the operator's operations and cabin crew member manual, the air operator certificate and operations specifications as are necessary for the performance of the assigned duties;

(iii) know the provisions of the Act, the regulations and technical standards as are necessary for the performance of the assigned duties; and

(iv) demonstrate to the Executive Director that the person has the ability to fulfil the responsibilities of the position.

(b) Responsibilities

The cabin crew manager is responsible for the professional standards of the cabin crews under his/her authority and in particular -

(i) assuring a current and approved cabin crew member manual is in place;

(ii) assuring a current and approved cabin crew member training programme;

(iii) the issuance of directives and notices to the cabin crew members as required;

(iv) the actioning and distribution of accident, incident and other occurrence reports, if applicable;

(v) the processing and actioning of any cabin crew member reports;

(vi) the supervision of cabin crew members;

(vii) assuming any responsibilities delegated by the person responsible for operations;

(viii) training of cabin crew members in accordance with the approved training programme;

(ix) the maintenance of cabin crew member training records;

(x) liaison with other company departments; and

(xi) the development of safety features cards.

(7) Air Safety Manager (ASM)

(a) Qualifications

The ASM shall, as a minimum, have -

(i) broad operational knowledge in the functions of the organisation or similar type of organisation;

(ii) completed an approved safety management system (SMS) course;

(iii) at least 2 years of experience closely involved in the management of an aviation safety programme, SMS or quality assurance programme.

(b) Responsibilities

The ASM is responsible for the operator's SMS and in particular -

(i) the establishment and maintenance of a reporting system to ensure the timely collection of information related to potential hazards, incidents and accidents that may adversely affect safety;

(ii) the identification of latent hazards and carry out risk management analyses of those hazards;

(iii) the investigation, analysis and identification of the root cause of all hazards or the contributing factors of incidents and accidents identified under the SMS to ensure the operator has adequate mitigation in place;

(iv) the establishment and maintenance of a safety data system, either by electronic or by other means, to monitor and analyse trends in hazards, incidents and accidents;

(v) the maintenance of a continuous monitoring system that evaluates the results of corrective actions with respect to hazards, incidents and accidents;

(vi) the monitoring of the concerns of the civil aviation industry in respect of safety and their perceived effect on the operator;

(vii) the co-ordination of the organisation's aviation safety programme and all related safety matters;

(viii) co-operation with the training section with regard to safety training of flight, cabin and ground crews, as applicable;

(ix) the supervision of aircraft handling regarding matters related to safety in co-operation with ground support services;

(x) the investigation of all incidents and accidents involving the organisation's aircraft, equipment and property, including fire and emergency procedures, not undertaken in accordance with Part 12;

(xi) the actioning and distribution of accident, incident and other occurrence reports;

(xii) the co-ordination with security personnel to ensure all aspects of security regarding the organisation's aircraft;

(xiii) the development and maintenance of a mandatory occurrence reporting scheme;

(xiv) the establishment of an emergency plan in the event of an accident, which includes the actions to be followed by relevant personnel;

(xv) in concert with the person responsible for quality, the maintenance of a quality assurance programme within the organisation; and

(xvi) the realisation of other duties which include -

(aa) promulgation of flight safety bulletins to all staff within the organisation;

(bb) conducting meetings with all relevant personnel regarding safety matters;

(cc) maintenance of safety equipment;

(dd) safety audits; and

(ee) occupational health and safety.

(8) Quality Manager (QM)

(a) Qualifications

The QM shall, as a minimum, have -

(i) grade 12 school level or equivalent;

(ii) certificate/s or diploma in quality management; and

(iii) at least 5 years experience in implementation and maintenance of quality management systems.

(b) Responsibilities

The QM is responsible for ensuring that the operator's quality assurance programme is properly established, implemented and maintained and in particular -

(i) the monitoring of compliance with, and the adequacy of, the procedures required to ensure safe operational practices and airworthy aircraft;

(ii) the monitoring of activity in flight operations, maintenance, crew training and ground operations, to ensure that the standards required by the Executive Director, and any additional requirements defined by the operator, are being met; and

(iii) any additional tasks that may be assigned with respect to the financial and non-operational efficiency aspects of the company.

(9) Security Manager (SM)

(a) Qualifications

The SM shall have, as a minimum -

(i) broad operational knowledge in the functions of the organisation or similar type of organisation;

(ii) completed an approved aviation security course or other course related to aviation security; and

(iii) at least 2 years of experience closely involved in the field of security or a combination of experience in aviation and training in security acceptable to the Executive Director.

(b) Responsibilities

The SM is responsible for ensuring that the operator's security programme is properly established, implemented and maintained and in particular -

(i) the monitoring of compliance with, and the adequacy of, the procedures established to ensure the security of the operator's facilities, aircraft and personnel through an inspection/audit programme;

(ii) the provision of training in all matters related to security either directly or through the operator's training department;

(iii) the identification of threats to aviation security, notification to the appropriate authority of such threats and the development of countermeasures to combat those threats, if applicable; and

(iv) liaising with aerodrome security personnel and other law enforcement authorities with respect to security matters.

121.06.3 APPLICATION, ADJUDICATION OF AND ISSUANCE OF AIR OPERATOR CERTIFICATE OR OPERATIONS SPECIFICATIONS

1. Document format and layout

The format and content of all Namibian air operator certificates (AOCs) and associated operations specifications (OpSpecs) shall be as prescribed by Appendix 6, to Annex 6, Part 1 of the ICAO Annexes.

2. Contents of an Air Operator Certificate

Each AOC shall contain at least the following information -

(a) the State of the Operator and the issuing authority;

(b) the AOC number and its expiration or valid to date or other means to indicate its validity;

(c) the operator name, trading name (if different) and address of the principal place of business;

(d) the date of issue and the name, signature and title of the authority representative; and

(e) the location, in a controlled document carried on board, where the contact details of operational management can be found.

Note - *For the purposes of establishing a controlled document to provide the information required by paragraph (e), an operator's operations manual is considered a good means of compliance provided it is contained in a Part of the operations manual required to be carried on board the operator's aeroplanes at all times.*

3. Contents of an operations specification

OpSpecs are issued in different parts and contain the following information as applicable to the authority being granted by the operations specification:

(a) Issuing authority contact details;

(b) the operator's registered name and the operator's trading name, if different;

(c) approved air services and associated AOC number(s);

(d) special authorisations and specific approvals:

(e) areas and types of operations approved;

(f) restrictions and limitation;

(g) aeroplane registration, makes, types and models to which the specification applies;

(h) issuance date of the operations specifications (dd-mm-yyyy) and signature of the Authority representative.

121.06.5 SAFETY AND SECURITY INSPECTIONS AND AUDITS

1. Classifications of findings or non-compliance

(1) NCAA for oversight in accordance with TS shall have a system to analyse findings for their safety significance.

(2) A level 1 finding shall be issued by the Authority when any significant noncompliance is detected with the applicable requirements of Civil Aviation Act, 2016, NAM-CARS and NAM-CATS, with the organisation's procedures and manuals or with the terms of an approval, certificate, specialised operation authorisation or with the content of a declaration which lowers safety or seriously hazards flight safety or security.

(a) The level 1 findings shall include:

(i) failure to give the Authority access to the facilities of the organisation during normal operating hours and after two written requests;

(ii) obtaining or maintaining the validity of the organisation certificate or specialised operations authorisation by falsification of submitted documentary evidence;

(iii) evidence of malpractice or fraudulent use of the organisation certificate or specialised operations authorisation; and

(iv) the lack of an accountable manager.

(3) A level 2 finding shall be issued by the Authority when any non-compliance is detected with the applicable requirements of NAMCARS and NAMCATS, with the organisation's procedures and manuals or with the terms of an approval, certificate, specialised operation authorisation or with the content of a declaration which could lower safety or hazard flight safety or security.

(4) A level 3 finding shall be issued by the Authority when a non-compliance or finding is identified which may not necessarily lower safety or hazard flight safety or security on its

own. It is the responsibility of the approval holder to rectify and shall not necessitate a follow-up inspection. The approval holder is required to notify the Authority when rectification has been effected. These findings are normally administrative in nature. Generally, a response containing corrective actions shall be received within 14 working days and no later.

(5) An observation shall be issued by the Authority when a practice or condition that indicates a trend that could lead to a future non-compliance is identified. It is highly recommended that an operator shall respond to the observation.

(6) When a finding is detected during oversight or by any other means, the Authority shall, without prejudice to any additional action required by NAMCARS and NAMCATS, communicate the finding to the organisation in writing and request corrective action to address the non-compliance(s) identified. Where relevant, the Authority shall inform the State in which the aircraft is registered.

(a) In the case of level 1 findings, the Authority shall take immediate and appropriate action to prohibit or limit activities, and if appropriate, it shall take action to revoke the certificate, specialised operations authorisation or specific approval or to limit or suspend it in whole or in part, depending upon the extent of the level 1 finding, until successful corrective action has been taken by the organisation.

(b) In the case of level 2 findings, the Authority shall:

(i) grant the organisation a corrective action implementation period appropriate to the nature of the finding that in any case initially shall not be more than three months. At the end of this period, and subject to the nature of the finding, the competent authority may extend the three-month period subject to a satisfactory corrective action plan agreed by the A authority; and

(ii) assess the corrective action and implementation plan proposed by the organisation and, if the assessment concludes that they are sufficient to address the noncompliance(s), accept these.

(c) Where an organisation fails to submit an acceptable corrective action plan, or to perform the corrective action within the time period accepted or extended by the competent authority, the finding shall be raised to a level 1 finding and action taken as laid down in (4)(1).

(d) The Authority shall record all findings it has raised or that have been communicated to it in accordance with point (e) and, where applicable, the enforcement measures it has applied, as well as all corrective actions and date of action closure for findings.

(7) Without prejudice to any additional enforcement measures, when the Authority identifies any non-compliance with the applicable requirements of its Regulations and its Standards by an organisation certified by, or authorised by or declaring its activity

to the authority of another Member State, it shall inform that competent authority of that State and provide an indication of the level of finding.

121.06.9 DEMONSTRATION FLIGHTS FOR INITIAL APPLICATION

(1) At least one successful demonstration flight shall be accomplished over a route typically operated by an operator under the following circumstances –

(a) for an applicant who is applying for an AOC, prior to conducting commercial operations; or

(b) for an existing AOC holder proposing to operate an aircraft type that an AOC holder has not previously used;

(c) prior to commencing any special operation which require approval and endorsement on an operation specification; and

(d) when an AOC holder is applying for a type of operation not authorised on an operator's current operations specifications.

(2) A demonstration flight for an applicant seeking an AOC shall be accomplished using an aeroplane intended for a proposed operation.

(3) An AOC holder shall be required to conduct a minimum of two flight sectors on intended routes or area of operations. A flight time shall be adequate to fully demonstrate an AOC holder's proposed OpSpec.

121.07.2 APPLICATION FOR FOREIGN AIR OPERATOR PERMIT OR AMENDMENT OF FOREIGN AIR OPERATOR PERMIT

1. Form of application

The form referred to in CAR 127.07.2, in which application must be made for the issuing of a foreign air operator permit, or an amendment thereof, is found under Forms and Application on NCAA website.

121.07.3 ASSESSMENT OF APPLICATION AND ISSUE OF PERMIT

1. Form of permit

The form referred to in CAR 127.07.3(4), on which a foreign air operator permit is issued, , is found under Forms and Application on NCAA website

121.07.7 RENEWAL OF PERMIT

1. Form of application

The form in which an application for the renewal of a foreign air operator permit must be made, , is found under Forms and Application on NCAA website.

121.08.1 ROUTES AND AREAS OF OPERATION AND AERODROME FACILITIES

1. Destination alternate aerodrome planning minima

(1) Except as provided in paragraph (2), an operator shall meet the applicable planning minima specified in the following table in order to select an aerodrome as a destination alternate, when required -

Approach and landing provisions	Ceiling	Visibility conditions
Aerodromes supporting instrument approach and landing operations, but not supporting straight-in approach and landing operations to at least two runway ends.	Applicable aerodrome operating minima plus an increment of 400ft	Applicable aerodrome operating minima plus an increment of 1 500m
Aerodromes supporting a straight-in instrument approach and landing operation to different suitable runways.	Applicable aerodrome operating minima plus an increment of 200ft	Applicable aerodrome operating minima plus an increment of 800m
Aerodromes supporting a minimum of two instrument approach and landing operations to different suitable runways, at least one shall be CAT II or III.	For CAT II operations at least 300ft For CAT III operations at least 200ft	For CAT II operations, a prevailing visibility corresponding to at least an RVR of 1 200m For CAT III operations, a prevailing visibility corresponding to at least an RVR of 550m

Note – *The term "different suitable runways" may denote either two or more separate runways or a single runway with a straight-in instrument approach and landing procedure to each end of the runway.*

(2) The criteria specified in paragraph (1) need not be complied with: Provided alternative selection criteria are submitted by the operator that are developed as a result of a safety risk assessment, based on the operator's SMS programme, which provide a level of safety equivalent to that in paragraph (1) and are approved by the Executive Director.

2. Extended diversion time operations

2.1. Application

(1) Applications to the Executive Director for an Operations Specification to operate flights in terms of the EDTO provisions shall be made in a manner acceptable to the Executive Director and that meets the requirements of this TS.

(2) Only turbine-powered aeroplanes shall be considered for approval to conduct EDTO flights.

2.2. Aerodrome Criteria

(1) Adequate aerodrome

An adequate aerodrome is an aerodrome which the operator considers to be satisfactory, taking into account landing performance requirements at the expected landing weight and runway characteristics. In addition, it should be anticipated that, at the expected time of use, the aerodrome will be available and equipped with necessary ancillary services, such as ATS, sufficient lighting, communications, weather reporting, navaids and emergency services.

(2) EDTO en route alternate airport

An EDTO en route alternate airport means an adequate airport that is listed in the operator's company operations manual and meets the planning minima specified in section 3.

2.3. Planning minima for an EDTO en route alternate

To be suitable to be listed in the flight plan as an EDTO en route alternate aerodrome, the following additional criteria must be met -

(a) the availability of an ATC facility;

(b) the availability of at least one let-down aid for an instrument approach; and

(c) the appropriate weather reports or forecasts, or any combination thereof, indicate that, during a period commencing 1 hour before and ending 1 hour after the expected time of arrival at the aerodrome, crosswind landing limits will not be exceeded and the weather conditions will be at or above the planning minima prescribed in the table below, and in accordance with the operator's EDTO approval.

Planning minima - EDTO

Type of approach	**Planning minima** (ceiling and RVR/visibility required, if applicable) Aerodrome with		
	at least 2 separate approach procedures based on 2 separate aids serving 2 separate runways	**at least 2 separate approach procedures based on 2 separate aids serving 1 runway**	**at least 1 approach procedure based on 1 aid serving 1 runway**
Precision approach CAT II, III (ILS MLS)	Precision approach Cat I minima	Non-precision approach minima	

Precision approach CAT I (ILS MLS)	Non-precision approach minima	Circling minima or, if not available, non-precision approach minima plus 200ft/1 000m
Non-precision approach	The lower of non-precision approach minima plus 200ft / 1 000m or circling	The higher of circling minima or non-precision approach minima plus 200ft/1 000m

Notes -

1. *"Tempo" and "Inter" conditions published in the forecast are not limiting unless these conditions are forecast to be below published planning minima. Where a condition is forecast as "Prob", provided the probability per cent factor is less than 40%, it is not limiting. However the PIC will be expected to exercise good aviation judgment in assessing the overall "Prob" conditions.*

2. *Runways on the same aerodrome are considered to be separate runways when -*

   (a) they are separate landing surfaces which may overlay or cross such that if one of the runways is blocked, it will not prevent the planned type of operations on the other runway; and

   (b) each of the landing surfaces has a separate approach procedure based on a separate aid.

3. *Only operators approved for Category II or III operations may use the planning minima applicable to Categories II and III in the table and then only if the aeroplane is certificated for a one engine inoperative Category II or III approach, as applicable.*

4. *The JAA Information Leaflet No. 20, IL20, may also be used by an operator to conduct an EDTO operation, together with the EDTO en route alternate weather criteria determined in this technical standard.*

121.08.10 REFUELLING AND DEFUELLING WITH PASSENGERS ON BOARD

Aeroplanes may be fuelled with passengers embarking, disembarking or on board under the following conditions -

(a) in order to ensure that crew members receive prompt notification of a situation threatening safety such as major fuel spill or a fire, two way communication is maintained between the ground crew supervising the fuelling and the qualified personnel on board the aeroplane so that the aeroplane can be deplaned or evacuated as necessary;

(b) a means of communication among the qualified personnel on board the aeroplane, ground/maintenance crews and fuelling agencies is determined and established and the procedures are provided to the appropriate personnel;

(c) the aeroplane engines are not running unless the aeroplane incorporates a propeller brake and the brake is set. The Aeroplane Flight Manual must refer to the propeller brake/engine as an auxiliary power unit (APU);

(d) during the fuelling process -

(i) aeroplane ground power generators or other electrical ground power supplies are not being connected or disconnected;

(ii) combustion heaters installed on the aeroplane (e.g. wing and tail surface heaters, integral cabin heaters) are not operated;

(iii) other combustion heaters used in the vicinity of the aeroplane are manufactured to the standards of Underwriters Laboratories or Namibian Standards Institution (NSI) and approved for use in a hazardous atmosphere;

(iv) known high energy equipment such as High Frequency (HF) radios are not operated, unless in accordance with the aeroplane manufacturer's approved flight manual where the manual contains procedures for the use of this equipment during fuelling;

(v) weather-mapping radar equipment in the aeroplane is not operated unless in accordance with the manufacturer's approved aeroplane flight manual where the manual contains procedures for use during fuelling;

(vi) aeroplane batteries are not being removed or installed;

(vii) external battery chargers are not being connected, operated or disconnected;

(viii) aeroplane-borne auxiliary power units (APUs) which have an efflux discharging into the zone are not started after filler caps are removed or fuelling connections are made;

(ix) if an auxiliary power unit is stopped for any reason during fuelling it shall not be restarted until the flow of fuel has ceased and there is no risk of igniting fuel vapours; however, the APU may be operated in accordance with the manufacturer's approved aeroplane flight manual if the manual contains procedures for starting the APU during fuelling;

(x) electric tools or similar tools likely to produce sparks or arcs are not being used; and

(xi) photographic equipment is not used within 3m of the fuelling equipment or the fill or vent points of the aeroplane fuel systems;

(e) fuelling is immediately suspended when there are lightning discharges within 8km of the aerodrome;

(f) the aeroplane is fuelled in accordance with manufacturer's procedures for that type of aeroplane;

(g) the aeroplane emergency lighting system is armed or on;

(h) "No Smoking" signs on board the aeroplane are illuminated, as applicable;

(i) procedures are established to ensure that passengers do not smoke, operate portable electronic devices or otherwise produce sources of ignition;

(j) a minimum of two exits are designated evacuation exits during fuelling; one of which must be the entry doors through which the passengers embarked;

(k) the designated evacuation exits during fuelling are identified by aeroplane type and published in the operator's operations manual and are clear and available for immediate use by passengers and crew members should an evacuation be required;

(l) the operator has procedures in place to ensure that there is a ready escape route from each designated evacuation exit during fuelling and that designated evacuation exits which are equipped with slides have the slides armed or a crew member is in the immediate vicinity to arm the slides if required;

(m) a means of evacuation such as a deployed integral stair, a loading stair or stand, a loading bridge or a passenger transfer vehicle (PTV) is in place at the aeroplane door used for the embarking and disembarking of passengers and is free of obstruction and available for immediate use by the aeroplane occupants, if necessary;

(n) for aeroplanes requiring a minimum cabin crew of one, a qualified person trained in the operation and use of emergency exits and in emergency evacuation procedures who is ready to initiate and direct an evacuation is at or near the passenger entry door;

(o) for aeroplanes requiring a minimum cabin crew of more than one, at least the minimum number of cabin attendants for the aeroplane type or the number of passengers on board, whichever is greater, are on board and positioned at or near each designated evacuation exit during fuelling. Cabin attendants may be replaced by an equivalent number of other staff provided that they have successfully completed the operator's approved emergency evacuation procedures training for that aeroplane type;

(p) flight crew members inform the senior cabin attendant when they are leaving the aeroplane;

(q) where desirable for climatic reasons and provided a flight crew member is on board or a means of communication is available to the cabin attendants, an aeroplane embarking door, that is inward opening or that can be fully opened to the exterior without repositioning of loading stairs or stand, may be closed and latched if necessary to keep it closed, but may not be locked; and

(r) procedures are established to ensure that cabin attendants or qualified persons replacing cabin attendants in accordance with sub-paragraph (o) are made aware of when fuelling will take place.

121.08.15 OPERATIONAL CONTROL AND SUPERVISION OF FLIGHT OPERATIONS

1. Operational control and supervision

(1) Operational control is the exercise of authority over the formulation, execution and amendment of an operational flight plan (OFP) in respect of a flight.

(2) An operator's organisational chart must clearly show that the executive and commercial functions of the operator have no direct link or authority over the operator's operational control system (OCS) except where such functions are directed through the "operations co-ordination process" as defined herein.

(3) Operations conducted under this Part require either a Type A or Type B OCS.

(4) Definitions

"co-authority dispatch" means a flight where a flight operations officer (FOO) and the pilot-in-command (PIC) share responsibility for the acceptance/completion of the OFP, flight release and flight watch;

"complex operations" means operations where the following conditions exist -

(a) the operator operates more than 10 aeroplanes having an approved passenger seating configuration of more than 50; and

(b) the operator's operations involve international flights;

"conflict resolution" means the process established by the operator and published in its operations manual employed to ensure that any conflict between the FOO and PIC is resolved in a manner that would provide the greatest level of safety;

"direct communication" means the ability of the FOO and PIC to communicate using the operator's facilities, an electronic data link facility or a facility operated by a third party as provided by an agreement;

"flight follower" means the person assigned the responsibility for flight following and such other duties as may be assigned;

"flight following" means the monitoring of a flight's progress, the provision of such operational information as may be requested by the PIC and the notification to appropriate operator and search-and-rescue authorities if the flight is overdue or missing. Meteorological information provided to the PIC by a flight follower shall not include analysis or interpretation by the flight follower unless such flight follower is a certified flight operations officer;

"flight release" means the means by which an operator authorises a flight to depart and represents -

(a) for a co-authority dispatch system, agreement between the PIC and the FOO that the flight has been planned and is being released for flight in accordance with the provisions of the operations manual; and

(b) for pilot self-dispatch, that the PIC is satisfied that the flight is safe for departure in accordance with the provisions of the operations manual;

"flight watch" means maintaining current information on the progress of the flight and monitoring all factors and conditions that might affect the OFP. Meteorological information provided to the PIC by the FOO may include analysis or interpretation;

"operations co-ordination process" means the process by which executive, financial or marketing or other upper management decisions can be effected without circumventing the established operational control system approved for an operator; may be assigned; and

"timely communication" means the ability to establish communications domestically within thirty minutes of first trying and internationally within one hour when the flight is in cruise.

(5) An operator shall specify flight planning procedures, including the duties of the PIC regarding flight preparation as prescribed in CAR 91.02.7, to provide for the safe conduct of the flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes concerned.

2. General

(1) In order to meet its own operational needs, an operator may choose to operate under an OCS of a higher classification than would normally be required as defined below. In such cases the operator shall fully comply with the higher OCS.

(2) The Executive Director may require an operator to upgrade its OCS in order to satisfy the conditions for issuance of certain operations specifications.

(3) Flight dispatch tasks include but are not limited to -

(a) obtaining and analysing the weather for the route and any destination or alternate aerodromes, including the determination of any adverse weather that may affect the safety of the flight;

(b) obtaining NOTAM information relevant to the flight and determining any effects on the proposed flight(s);

(c) determining the mass and balance for the flight;

(d) preparing the operational flight plan (OFP) as specified in regulation 121.04.5, with emphasis on fuel requirements and navigational data;

(e) preparing and submitting the ATC flight plan;

(f) determining the maintenance status of the aircraft, in particular the effects of any unserviceabilities on the proposed route (EDTO, RVSM, PBN/RNP, etc.);

(g) determining that the crew is qualified for the area, route and/or aerodromes;

(h) preparing the passenger and crew manifest;

(i) determining the suitability and availability of all destination or alternate aerodromes, including ensuring aircraft performance and aerodrome operating minima criteria are met for each; and

(j) for EDTO flights, determining that en route alternates are within the required diversion time.

3. OCS Types

(1) Type A

A Type A OCS classification shall apply to operators carrying passengers or a combination of cargo and passengers using aeroplanes involved in complex operations.

(2) Type B

A Type B OCS classification shall apply to operators involved in cargo-only operations or carrying passengers or a combination of cargo and passengers using aeroplanes not involved in complex operations.

4. Operational control systems description

(1) Type A OCS

(a) Responsibility and Authority

A Type A OCS is based on a co-authority dispatch system. Under a co-authority dispatch system, the operations manager has delegated authority and responsibility for operational control over each flight jointly to the PIC and the FOO, under which system -

(i) the FOO is responsible for -

(aa) completion of the flight dispatch tasks noted in section 2(3) of this TS;

(bb) briefing the flight crew in terms of -

(A) forecast and actual weather for each route to be flown and each airport to be used, including forecasts of weather phenomena that may affect the safety of flight, including adverse weather phenomena such as clear air turbulence, thunderstorms and low altitude windshear;

(B) current reports or information on airport conditions and irregularities of navigation facilities that may affect the safety of the flight, including NOTAMs and where applicable, relevant operations bulletins affecting the proposed flight;

(C) maintenance status of the aeroplane; and

(D) a review of all the elements of the OFP;

(cc) signing or otherwise acknowledging responsibility for preparation of the flight release, as approved in the OCS;

(dd) monitoring the progress of each flight;

(ee) issuing necessary information for the safety of the flight, including weather, navigation or aerodrome updates as may be required;

(ff) co-ordinating with air traffic control in the event operational instructions to an aeroplane en route are required to be issued that would necessitate a change to the air traffic services flight plan;

(gg) assisting the PIC in decision-making with respect to the continuation, diversion or termination of a flight; and

(hh) following the procedures prescribed in section 5 of this TS during the progress of an emergency;

(ii) the PIC is responsible for -

(aa) reviewing all dispatch documents relating to the proposed flight and signing for the acceptance of the flight release or otherwise indicating acceptance of the flight release, as approved in the OCS;

(bb) providing the FOO with flight information relating to the progress, condition and arrival of the flight, if required;

(cc) returning his or her copy of the documents required to be retained in terms of
CAR 121.04.1 to the operator, as provided in the operations manual;

(dd) conducting the flight in accordance with all published rules and regulations relating to such flight; and

(ee) following the procedures specified in section 5 of this TS during the progress of an emergency;

(iii) the FOO and the PIC share responsibility for flight watch. The FOO shall provide pertinent and related flight information to the PIC including any changes to the OFP proposed by the FOO or the operator;

(iv) once a flight has commenced, the final decision on any changes to the OFP shall be taken by the PIC based on considerations of safety. For the purpose of operational control systems, a flight is deemed to be "commenced" after brake release for take-off; and

(v) limited pilot self-dispatch of flights may be permitted at those en route stops where a lack of communications facilities prevents the co-authority dispatch of a flight. In such cases, the operator shall develop, and submit to the Executive Director for approval, those additional procedures that are intended to compensate for the lack of FOO participation in the release of the next flight.

(b) Communications

(i) Timely and direct communication between the responsible flight dispatch centre and the PIC of a flight shall be maintained during flight time over all

or almost all of the route structure. A communications capability similar to that required for a Type B OCS may be authorised for mid-route sectors of flights and certain destinations, where direct communication is not practical.

(ii) A direct communications capability between the PIC and the flight dispatch centre shall be provided at any station regularly served by the operator. The equipment used shall be accessible to the PIC and may include any or all of the following -

(aa) VHF/HF radio voice;

(bb) telephone, including satellite or cellular phones;

(cc) data link; and

(dd) teletype.

Note - *This requirement may be waived by the Executive Director at those stations where a lack of facilities prevents communication between the PIC and a flight dispatch centre.*

(c) Flight dispatch centre manning

(i) The operator shall provide sufficient personnel to operate its OCS based on the operator's workload analysis. In no case shall there be fewer than one qualified FOO on duty per duty period.

(ii) Flight followers may be used to augment FOOs: Provided they have been trained with respect to the duties they will be performing, are current and operate under the direction of a qualified FOO.

(d) Flight dispatch centre

(i) The flight dispatch centre shall be established so as to ensure operational control throughout the operator's entire route structure or area of operations.

(ii) The operator shall establish a system to inform FOOs at each centre of significant changes in flight conditions and in conditions at stations significant to the operator's flights.

(iii) Each centre shall have a means of providing to the FOOs without delay -

(aa) NOTAM and NOTAM summaries;

(bb) all weather reports for airports used as destination or alternate airports or for emergencies;

(cc) forecasts, area and terminal, for the area of responsibility and such wider area as is needed for proper weather trend analysis; and

(dd) weather radar summaries, where available as part of the normal weather reporting system.

(iv) Each centre shall be provided with -

(aa) aeroplane operating manuals and MELs, as appropriate;

(bb) company operations manual;

(cc) airport runway data; and

(dd) such additional information as may be needed to enable the formulation of an OFP or to exercise flight watch.

(v) Each centre shall be provided with communications equipment that ensures -

(aa) a means to provide a hard copy of or an amendment to an OFP to the PIC; and

(bb) direct ATS contact.

(e) Flight operations officer

(i) An operator shall establish the daily duty period for each FOO so that it begins at a time that allows him or her to receive a briefing or become familiar with at least -

(aa) all pertinent weather charts, weather reports;

(bb) NOTAMs or operational restrictions in force; and

(cc) flights in the air, flights for which OFPs have been issued but that have not yet commenced and for which he or she will be responsible, as well as the forecast flight schedule.

(ii) A FOO shall remain on duty until -

(aa) each aeroplane dispatched by him or her has completed its flight or gone beyond his or her jurisdiction; or

(bb) relieved by another qualified FOO.

(iii) The operator shall ensure that each FOO is trained and qualified in accordance with the requirements of its approved training programme.

(iv) The responsible FOO may supervise personnel, including flight followers or other assistants, as part of an approved on-the-job training programme: Provided this supervision does not interfere with the performance of his or her duties.

(v) The FOO shall maintain a record of information generated or exchanged in relation to any flight for which that FOO has responsibility.

(f) Flight release

(i) The flight release of a flight occurs when the FOO approves the OFP after which it is submitted to the PIC for acceptance and an agreement is reached

between both parties with respect to the OFP and the conduct of the flight. When there is disagreement between the FOO and the PIC over the dispatch of a flight, the conflict resolution policy, as specified in the operations manual, shall be followed. The flight release may be in the form of an OFP or a separate document forming part of the OFP, signed by the FOO and the PIC and issued in accordance with the company operations manual.

Notes -

1. *A flight release need not be signed by the FOO and PIC if an acceptable alternative means of indicating acceptance by both the FOO and PIC has been approved by the Executive Director.*

2. *In the event the conflict resolution policy is invoked for a flight, a report shall be submitted to the operations manager for his or her assessment and follow-up action, giving full details of the area of conflict and the action taken. Consideration should be given as to whether or not the person responsible for safety is informed of the conflict and the resolution action taken.*

(ii) Each flight release is issued subject to regulations 121.07.13(4) and (5) with respect to the continued validity of a flight release.

(iii) A means shall be provided and procedures developed to ensure that at each location where flights originate, the PIC -

(aa) receives meteorological and NOTAM information related to the flight;

(bb) obtains a hard copy of the OFP; and

(cc) except where communication is not practical, can contact the responsible FOO prior to take-off, if necessary.

(iv) A means shall be provided and procedures developed to ensure that at each location where flights operate, the PIC is able to receive updates on weather, NOTAMs or other information critical to the next flight.

(g) Flight watch

(i) A FOO shall maintain current information on the progress of flights for which he or she is responsible.

(ii) Flight watch shall continue until completion of the flight and all factors and conditions that might affect the OFP shall be communicated to the PIC.

(iii) In-flight reports shall be directed from the PIC to the FOO performing flight watch -

(aa) after each take-off and landing;

(bb) at least once an hour on any flight longer than one hour conducted in uncontrolled airspace;

(cc) at intervals not greater than two hours on international operations where communications are possible;

(dd) when the fuel remaining at any time on the flight falls below the minimum specified in the OFP; and

(ee) where the PIC determines a change is necessary to the OFP en route.

(2) Type B OCS

(a) Application for approval -

(i) An operator seeking approval to use a Type B OCS shall clearly identify in its operations manual the specific tasks to be performed by the flight crew and flight operations personnel with respect to the flight dispatch tasks as identified in section 2 of this TS.

(ii) Prior to approval to use a Type B OCS, the operator shall demonstrate to the satisfaction of the Executive Director that the time allotted to the flight crew to complete the flight dispatch tasks assigned to them -

(aa) is sufficient to complete all tasks prior to flight and at en route stops; and

(bb) has been considered when scheduling flight duty periods; in particular, time spent for pre-flight preparation and at en route stops.

(b) Responsibility and authority

(i) A Type B OCS is based on pilot self-dispatch. Operational control is delegated to the PIC by the operations manager, who retains responsibility for the day-to-day conduct of flight operations. Under a pilot self-dispatch system, the delegation includes the authority and responsibilities specified in paragraph (1)(a)(i)(aa) to (dd) and (1)(a)(ii) of this section. However, in the event of an emergency other than an in-flight emergency for which pilot actions are required, the operations manager or his delegate, shall be responsible for the appropriate actions prescribed in section 5 of this TS.

(ii) The responsibility for flight following shall be shared between the PIC and the person assigned to flight following in the operator's operational control centre.

(c) Operational control centre

(i) An operator shall establish a centre at which current information on the location of the operator's aeroplanes shall be maintained. Such centre is normally located at the main base of operations or, where appropriate, at a sub-base of operations.

(ii) The operator shall establish a system to inform the person responsible for flight following at each centre of significant changes in flight conditions and in conditions at stations significant to the operator's flights.

(iii) Each centre shall have a means of providing to the person responsible for flight following without delay -

(aa) NOTAM and NOTAM summaries;

(bb) all weather reports for airports used as destination or alternate airports or for emergencies; and

(cc) forecasts, area and terminal, for the area of responsibility and such wider area as is needed for proper weather trend analysis.

(iv) Each centre shall be provided with communications equipment that ensures -

(aa) for domestic operations, direct contact with the PIC during flight when operating in the vicinity of airports regularly served by the operator. At those stations where a lack of facilities prevents direct communications between the PIC and flight dispatch centre, reliable indirect contact through a ground station and radio relay from that station by the operator's personnel to the PIC may be permitted;

(bb) for international operations, indirect communication with the PIC while airborne through any available means; and

(cc) direct ATS contact.

(d) Communications

(i) Direct or indirect communication between the operational control centre and the PIC shall be maintained during flight time with as short a delay of delivery as practical. A private agency under contract to the operator may be approved to provide the required communications services. The use of ATS communications is permitted if the services of a private agency are not available.

(ii) The means of communicating may be the same as that specified in section 1(1)(b)(ii) of this technical standard.

(e) Operational control centre manning

The operator shall provide sufficient personnel to operate its operational control system based on the operator's workload analysis. The operator may utilise FOOs or flight followers or a combination of both.

(f) Flight operations officers/flight followers

(i) The FOO or flight follower, as applicable, shall be qualified in accordance with Subpart 3 of this Part and knowledgeable in the operator's flight alerting procedures.

(ii) The operator shall ensure that any other person assigned a responsibility within the OCS is trained and qualified in accordance with the requirements of its approved training programme.

(iii) The person responsible for flight following shall maintain a record of information generated or exchanged in relation to any flight for which that FOO or flight follower has responsibility.

(g) Flight release

Flights operated under this system are self-dispatched and released by the PIC. An operator choosing to use a pilot self- dispatch system shall develop policies and procedures acceptable to the Executive Director for the official flight release and where the PIC is responsible for the development of the OFP, specialised training shall be provided to that pilot.

Note - *A pilot self-dispatch system does not provide exemption from the pre-flight duties normally undertaken by the FOO or flight follower; it only allows that such duties are accomplished by the pilot. Normally flight releases would be prepared by a qualified FOO and sent to the line stations where pilot self-dispatch was required.*

(h) Flight following

(i) The person responsible for flight following shall monitor each flight from its commencement to its termination, including any intermediate stops or diversions from the flight planned route, and maintain current information on the progress of flights for which he or she is responsible.

(ii) Flight following shall include provision for the notification to the operations manager of any missing or overdue aeroplanes.

(iii) Flight following procedures shall be described in the operator's operations manual.

(iv) The PIC shall ensure that messages concerning aeroplane landings and departures from point of origin, en route stops and final destination are passed to the person responsible for flight following for that flight.

5. Emergency response plan

(1) In a situation in which the PIC is required to take emergency action, he or she shall, in addition to any reports required by regulation 91.02.6, report the matter to the FOO or flight follower responsible for flight monitoring as soon as practical.

(2) Where the flight operations officer (FOO), flight follower or operations manager becomes aware of any emergency situation that could pose a hazard to a flight in progress, they shall advise the PIC and the appropriate authorities of such emergency by the quickest means available. Furthermore, he or she shall-

(a) remain available to the PIC of that flight on a continuous basis until -

(i) the threat of such emergency has passed;

(ii) the PIC has made a decision and acted upon it and it has been determined that the operator's assistance is no longer required; or

(iii) the flight is handed off to another competent person who is able to be of assistance;

(b) relay required messages through third parties as necessary to communicate with the flight; and

(c) request such assistance from the appropriate authority as may be necessary.

(3) In the event an aeroplane becomes overdue or is missing, an emergency shall be declared and the overdue or missing aeroplane procedures, as appropriate, shall be followed as prescribed in the operations manual. Such procedures shall include, as a minimum, reporting the overdue or missing aeroplane to an air traffic services unit, the appropriate authority and search and rescue authorities.

(4) Whenever a PIC, FOO or operations manager exercises emergency authority, he shall declare an emergency and keep the appropriate ATC facility and dispatch centres fully informed of the progress of the flight.

(5) The person declaring the emergency shall send a written report of the circumstances surrounding the emergency to the operator's operations manager within 48 hours. The operations manager shall submit a report to the Executive Director and any other authority, if required, within 10 days of the incident.

6. Flight tracking

(1) The operator shall track the position of an aeroplane through automated reporting at least every 15 minutes for the portion(s) of the in-flight operation(s) that is planned in an oceanic area(s) under the following conditions:

(a) the aeroplane has an MCM of over 45 500 kg and a seating capacity greater than 19; and

(b) where an ATS unit obtains aeroplane position information at greater than 15 minute intervals.

(2) The operator shall establish procedures, approved by the Executive Director, for the retention of aircraft tracking data to assist SAR in determining the last known position of the aircraft.

(3) All aeroplanes of an MCM of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2024, shall autonomously transmit information from which a position can be determined by the operator at least once every minute, when in distress.

(4) Notwithstanding the provisions of subsection (1), the Executive Director may, based on the results of an approved risk assessment process implemented by the operator, allow for variations to the automated reporting intervals.

(5) The risk assessment process shall demonstrate how risks to the operation regulating from the allowable variations can be managed and shall include at least the following:

(i) capability of the operator's operational control systems and processes, including those for contacting ATS units;

(ii) overall capability of the aeroplane and its systems;

(iii) available means to determine the position of, and communicate with, the aeroplane;

(iv) frequency and duration of gaps in automated reporting;

(v) human factors consequences resulting from changes to flight crew procedures; and

(vi) specific mitigation measures and contingency procedures.

Note - *More detailed information and guidance on flight tracking and autonomous transmission of information on position reporting is contained in the ICAO guidance material on flight tracking - Aircraft Tracking Implementation Guidelines (Cir 347).*

121.08.21 REQUIREMENTS FOR MINIMUM EQUIPMENT LIST

NCAA reviews an operator's proposed MEL in accordance with Technical Guidance Material (TGM). It is recommended that an operator planning to present a MEL for review first becomes familiar with the procedures contained therein in order to interface with the NCAA operations and airworthiness processes. This form is available on the NCAA Website under Forms and Applications

121.08.25 FUEL POLICY

1. Planning criteria for aeroplanes

(1) An air operator shall base the fuel policy, including calculation of the amount of fuel to be carried by an aeroplane, on the planning criteria specified in this technical standard.

(2) If the operator's fuel policy is not based on planning as provided in paragraphs (3), (4) or (5), the amount shall be based on -

(a) taxi fuel, which must not be less than the amount, expected to be used prior to take-off. Local conditions at the departure aerodrome and APU consumption shall be taken into account;

(b) trip fuel, which must include -

(i) fuel for take-off and climb from aerodrome elevation to initial cruising level/altitude, taking into account the expected departure routing;

(ii) fuel from top of climb to top of descent, including any step climb/descent;

(iii) fuel from top of descent to the point where the approach is initiated, taking into account the expected arrival procedure; and

(iv) fuel for approach and landing at the destination aerodrome;

(c) contingency fuel which shall, in addition to the factors noted in section 2 of this technical standard, be -

(i) the calculated result of a data-driven method using safety risk assessment based on a fuel consumption monitoring programme or advanced use of available en route alternates; or

(ii) 5 per cent of the planned trip fuel based on the consumption rate used to plan the trip fuel but in any case not lower than an amount to fly for 5 minutes at holding speed at 1 500 feet (450m) above the destination aerodrome in standard conditions;

(d) alternate fuel, which must be sufficient for -

(i) if a destination alternate aerodrome is required -

(aa) a missed approach from applicable MDA/DH at the destination aerodrome to missed approach altitude, taking into account the complete missed approach procedure;

(bb) a climb from the missed approach altitude to cruising level/altitude;

(cc) the cruise from top of climb to top of descent;

(dd) descent from top of descent to the point where the approach is initiated, taking into account the expected arrival procedure; and

(ee) executing an approach and landing at the destination alternate aerodrome;

(ii) if two destination alternates are required, alternate fuel shall be sufficient to proceed to the alternate which requires the greater amount of alternate fuel allowing for the consumption specified in sub-sub-paragraph (i); or

(iii) if a destination alternate aerodrome is not required, as specified in CAR 121.07.1(4), an amount of fuel sufficient to enable the aeroplane to hold for 15 minutes at 1 500ft above destination aerodrome elevation in standard conditions;

(e) final reserve fuel, which shall be -

(i) for aeroplanes with reciprocating engines, fuel to fly for 45 minutes; or

(ii) for aeroplanes with turbine engines, fuel to fly for 30 minutes,

at holding speed at 1 500 feet above aerodrome elevation in standard conditions, calculated with the estimated mass on arrival at the alternate or the destination, when no alternate is required;

(f) additional fuel, which shall be a supplementary amount of fuel required if the minimum fuel calculated in accordance with sub- paragraphs (c) and (d) above is not sufficient to permit the aeroplane -

(i) following the possible failure of a power unit or loss of pressurisation, whichever requires the greater amount of fuel based on the assumption that such a failure occurs at the most critical point along the route, to -

(aa) descend as necessary and proceed to an adequate aerodrome;

(bb) hold there for 15 minutes at 1 500 feet above aerodrome elevation in standard conditions; and

(cc) make an approach landing; and

(ii) meet additional requirements not covered in sub-paragraph (f)(i); and

(g) discretionary fuel, which is at the discretion of the PIC.

(3) If an operator's fuel policy includes replanning based on the use of a decision point while en route, the amount of fuel shall be the greater of sub-paragraph (a) or (b) below -

(a) the sum of -

(i) taxi fuel as specified in paragraph (2)(a) above;

(ii) trip fuel to the destination aerodrome as specified in paragraph (2)(b) above, via the decision point;

(iii) contingency fuel equal to not less than 5% of the estimated fuel consumption from the decision point to the destination aerodrome;

(iv) alternate fuel, if a destination alternate is required, as specified in paragraph (2)(d) above;

(v) final reserve fuel as specified in paragraph (2)(e) above;

(vi) additional fuel as specified in paragraph (2)(f) above; and

(vii) discretionary fuel, if required by the PIC; or

(b) the sum of -

(i) taxi fuel as specified in paragraph (2)(a) above;

(ii) the estimated fuel consumption from the departure aerodrome to a suitable en route alternate, via the decision point;

(iii) contingency fuel equal to not less than 3% of the estimated fuel consumption from the departure aerodrome to the en route alternate;

(iv) final reserve fuel as specified in paragraph (2)(e) above;

(v) additional fuel as specified in paragraph (2)(f) above; and

(vi) discretionary fuel, if required by the PIC.

(4) If an operator's fuel policy includes planning to a destination alternate where the distance between the destination aerodrome and the destination alternate is such that a flight can only be routed via a predetermined point to one of these aerodromes, the amount of fuel must be the greater of sub-paragraph (a) or (b) below -

(a) the sum of -

(i) taxi fuel as specified in paragraph (2)(a) above;

(ii) trip fuel from the departure aerodrome to the destination aerodrome, via the predetermined point;

(iii) contingency fuel calculated in accordance with paragraph (2)(c) above;

(iv) additional fuel as specified in paragraph (2)(f) above, if required, but not less than -

(aa) for aeroplanes with reciprocating engines, fuel to fly for 45 minutes plus 15% of the flight time planned to be spent at cruising level or two hours, whichever is less; or

(bb) for aeroplanes with turbine engines, fuel to fly for two hours at normal cruise consumption after arriving overhead the destination aerodrome, including final reserve fuel; and

(v) discretionary fuel, if required by the PIC; or

(b) the sum of -

(i) taxi fuel as specified in paragraph (2)(a) above;

(ii) trip fuel from the departure aerodrome to the alternate aerodrome, via the predetermined point;

(iii) contingency fuel calculated in accordance with paragraph (2)(c) above;

(iv) additional fuel as specified in paragraph (2)(f) above, if required, but not less than -

(aa) for aeroplanes with reciprocating engines, fuel to fly for 45 minutes; or

(bb) for aeroplanes with turbine engines, fuel to fly for 30 minutes at holding speed at 1 500 feet above aerodrome elevation in standard conditions, including final reserve fuel; and

(v) discretionary fuel, if required by the PIC.

(5) If an operator's fuel policy includes planning to an isolated aerodrome for which a destination alternate is not required or does not exist as specified in regulation 121.07.1(4)(c), the amount of fuel at departure shall include -

(a) taxi fuel as specified in paragraph (2)(a) above;

(b) trip fuel as specified in paragraph (2)(b) above;

(c) contingency fuel calculated in accordance with paragraph (2)(c) above;

(d) final reserve fuel as specified in paragraph (2)(e) above;

(e) additional fuel as specified in paragraph (2)(f) above, if required, but not less than -

(i) for aeroplanes with reciprocating engines, fuel to fly for 45 minutes plus 15% of the flight time planned to be spent at cruising level, or two hours, whichever is the lesser; or

(ii) for aeroplanes with turbine engines, fuel to fly for two hours at normal cruise consumption after arriving overhead the destination aerodrome; and

(f) discretionary fuel, if required by the PIC.

2. Unforeseen circumstances

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

(a) deviations of an individual aeroplane from the expected fuel consumption data;

(b) deviations from forecast meteorological conditions; and

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

(2) This fuel is to be included as part of the contingency fuel planning considerations.

121.08.30 INERTIAL NAVIGATION AND INERTIAL REFERENCE SYSTEMS

1. General

Inertial navigation may be authorised in an air operator's operations specifications. For the holders of an operations specification, inertial navigation may be used to satisfy the requirements for navigation in airspace where minimum navigation performance specifications apply. The inertial navigation system (INS) or inertial reference system (IRS) and its installation must be certified by the Executive Director as meeting the airworthiness standards prescribed in Part 21.

Notes -

1. *Airworthiness requirements will be satisfied provided that -*

   (a) *the equipment has been installed to the manufacturer's requirements;*

   (b) *the installation is listed in the aircraft type certificate or has a supplemental type certificate for the specific aircraft type;*

   (c) *there is a flight manual supplement covering any system limitations; and*

   (d) *the system is included in the operator's maintenance programme.*

2. *Outside Namibia (for example, in Europe and over the North Atlantic) other State authorities might require navigation performance different to that required by these standards.*

2. Minimum performance for operational approval

(1) An INS/IRS must meet the following criteria for operational approval and must be maintained to ensure performance in accordance with the criteria -

   (a) with a 95% probability the radial error rate is not to exceed 2nm per hour for flights up to 10 hours duration; and

   (b) with a 95% probability the cross-track error is not to exceed ±20nm and along track error is not to exceed ±25nm at the conclusion of a flight in excess of 10 hours.

(2) The INS/IRS should have the capability for coupling to the aircraft's autopilot to provide steering guidance.

(3) The navigation system should have the capability for updating the displayed present position.

3. Serviceability requirements

(1) An INS/IRS may be considered as serviceable for navigation purposes until such time as its radial error exceeds 3 + 3t nm (t being the hours of operation in the navigation mode).

(2) Maintenance corrective action must also be taken when an INS/IRS is consistently providing radial error rates in excess of 2nm per hour and/or track and along track errors in excess of the tolerance given at sub-paragraph (1) on more than 5% of the sectors flown.

4. System performance monitoring

The operator is to monitor and record the performance of INS/IRS and may be required to provide details of the system accuracies and reliabilities from time to time.

5. Navigation criteria

Navigation using INS/IRS as the primary navigation means is permitted in accordance with the following conditions -

(a) initial confidence check. The INS/IRS must be checked for reasonable navigation accuracy by comparison with ground-referenced radio navigation aids (which may include ATC

radar) before proceeding outside the coverage of the short range radio navigation aids system;

(b) maximum time -

(i) single INS/IRS -

(aa) the maximum operating time since the last ground alignment is not to exceed 10 hours;

(bb) on flights of more than 5 hours, any route sector may be planned for navigation by INS/IRS within the appropriate time limits (given in (c) below) but contingency navigation procedures must be available in the event of an INS/IRS inflight unserviceability which would preclude the aircraft's operation on a subsequent route sector for which area navigation is specified; and

(cc) INS/IRS may be used as a sole source of tracking information for continuous period not exceeding -

(A) 3 hours in controlled airspace other than oceanic control area (OCA); or

(B) 5 hours in OCA or outside controlled airspace (OCTA);

(ii) two or more INS/IRS -

(aa) if, during a flight, 10 hours elapsed time since the last ground alignment will be exceeded, ground alignment is to be included in the pre-flight flight deck procedures prior to pushback/taxi for departure; and

(bb) INS/IRS may be used as the sole source of tracking information for continuous periods not exceeding -

(A) 5 hours in controlled airspace other than OCA; or

(B) 12 hours in OCA or OCTA;

Notes -

1. *Provided that the use of INS/IRS as the sole means of navigation does not exceed the time limit, the aircraft may be operated for longer periods using the INS/IRS with either manual or automatic updating.*

2. *The 5 hour limit on single INS/IRS ensures 99.74% (3 sigma) probability that loss of satisfactory navigation capability will not occur with equipment mean time between failures (MTBF) of approximately 1900 hours. If the demonstrated MTBF exceeds 2000 hours, the maximum time may be increased.*

(c) updating inertial present position in flight is permitted in the following instances only -

(i) manually -

(aa) overhead a VOR beacon;

(bb) within 25nm of a co-located VOR/DME beacon; or

(cc) over a visual fix when at a height not more than 5 000ft above the feature;

(ii) automatically -

(aa) within 200 nautical miles of a DME site when the aircraft's track will pass within 140nm of the site;

(bb) within 200nm of both DME sites for a DME/DME Fix;

(cc) from a co-located VOR/DME beacon provided that updates from a receding beacon are not accepted when the beacon is more than 25nm from the aircraft;

Notes -

1. *En route VOR and DME sites separated by not more than 500 metres are considered to be co-located.*
2. *DME slant range error correction might be necessary in some circumstances.*
3. *Updating a present position from a visual fix may not be planned for IFR flights.*
4. *A receding beacon is one from which the distance to the aircraft is increasing.*
5. *Updating in other circumstances (for example, over a NDB) will not provide sufficient accuracy to ensure that the INS/IRS operates within the prescribed tolerances for navigation.*
6. *Because INS/IRS are essentially accurate and reliable, and ground alignment is more accurate than in-flight updating, updating of present position is usually not warranted especially during the initial few hours of operation. However, INS/IRS errors generally increase with time and are not self-correcting. Unless the error is fairly significant (for example, more than 4nm/hr along track or 2nm/hr cross track) it may be preferable to retain the error rather than manually update.*

(d) Limitation on use. Wherever track guidance is provided by radio navigation aids, the PIC must ensure that the aircraft remains within the appropriate track-keeping tolerances of the radio navigation aids. INS/IRS is not to be used as a primary navigation reference during IFR flight below lowest safe altitude (LSALT); and

(e) Pre-flight and enroute procedures. The following practices are required -

(i) new data entries are to be cross-checked between at least two flight crew members for accuracy and reasonableness, or, for single pilot operations, an independent

check (for example, of INS/IRS-computed tracks and distances against the flight plan) must be made;

(ii) as a minimum, position and tracking information is to be checked for reasonableness (confidence check) in the following cases-

(aa) prior to each compulsory reporting point;

(bb) at or prior to arrival at each enroute way point during RNAV operation along RNAV routes;

(cc) at hourly intervals during area type operation off established RNAV routes; and

(dd) after insertion of new data.

6. Operating criteria

(1) For two or more INS/IRS installations -

(a) if one INS/IRS fails or can be determined to have exceeded a radial error of 3+3t nm, operations may continue on area navigation routes using the serviceable system(s) in accordance with the navigation criteria applicable to the number of INS/IRS units remaining serviceable;

(b) if -

(i) the difference of pure inertial readouts between each pair of INS/IRS is less than 1.4 (3+3t) nm, no action is required;

(ii) the difference of pure inertial readouts between any pair of INS/IRS exceeds 1.4 (3+3t) nm and it is possible to confirm that one INS/IRS has an excessive drift error, that system should be disregarded and/or isolated from the other systems) and the apparently serviceable system(s) should be used for navigation; and

Note - *This check and its isolation action are unnecessary if a multiple INS/IRS installation is protected by a serviceability self-test algorithm.*

(iii) if neither condition (i) or (ii) can be satisfied, another means of navigation should be used, and the PIC must advise the appropriate ATS unit.

(2) For single INS/IRS installations, if the INS/IRS fails or exceeds the serviceability tolerance -

(a) the PIC must advise the appropriate ATS unit of INS/IRS failure;

(b) another means of navigation is to be used; and

(c) the aircraft is not to begin a route sector for which area navigation is specified unless it is equipped with an alternative, serviceable, approved area navigation system.

(3) Autopilot coupling to the INS/IRS should be used, whenever practicable, if this feature is available. If for any reason the aircraft is flown without autopilot coupling, the aircraft is to be flown within an indicated cross-track tolerance of ±2nm. In controlled airspace the ATS unit is to be advised if this tolerance is exceeded.

7. Navigation tolerances

(1) The maximum drift rate expected from INS/IRS is 2nm per hour (2 sigma probability). For the purposes of navigation and determining aircraft separation, the 3 sigma figure of 3nm is allowed so that the maximum radial error with 3 sigma confidence equals 3+3t nm, where t equals the time in hours since the INS/IRS was switched into the navigation mode.

(2) DME and other inputs can automatically influence the INS/IRS to improve the accuracy of its computed position. The pilot may also insert known position co-ordinates to update the INS/IRS. Therefore, if the system is updated with known position information the position error is reduced and the INS/IRS can be assumed to operate within the radial error tolerance of 3+3T nm where T is the time (hours elapsed since the last position update).

(3) The accuracy of the data used for updating must be considered. The navigation aid positions used for updating inertial present position are accurate to within 0.1 nm. However, the aircraft in flight cannot be "fixed" to the same order of magnitude. The accuracy of the position fix is taken as ±3nm radial error.

(4) Because the INS/IRS error, the navigation aid position accuracy and the position fix errors are independent of each other, the total radial error is determined by the root-sum-square method -

Total error = $\sqrt{(3+3T)^2 + 0{,}1^2 + 3^2}$ nm

(5) The effect of navigation aid position accuracy on the total error is negligible, and so -

Total error = $\sqrt{(3+3T)^2 + 3^2}$ nm

= $\sqrt{(1+T)^2 + 1}$ nm

Substituting values for T at time of update, total

radial error =4,2nm

after 1 hour = 6,7nm

after 2 hours = 9,5nm

after 3 hours = 12,4nm

after 4 hours = 15,3nm

after 5 hours = 18,2nm

after 6 hours = 21,2nm

(6) If two INS/IRS are installed and the aircraft is navigated by averaging, the inertial present position formula for the total radial error given in sub-paragraph (4) is modified by multiplying by -

$$\frac{1}{\sqrt{2}} = (= 0{,}7)$$

(7) If three INS/IRS are installed and "triple mix" is used, the total radial error is further reduced. For simplicity for navigation and aircraft separation, the tolerances applicable to dual installations apply and the third system provides redundancy.

121.08.32 LOW VISIBILITY OPERATIONS

1. Certification overview

(1) Low visibility operations (LVO) are comprised of lower-than-normal visibility minima take-off (LVTO) and lower-than-normal weather and visibility minima approach operations (CAT II/III approaches). An applicant for an operations specification authorising low visibility operations shall meet the certification criteria contained in this TS.

(2) An operator shall only conduct LVO if -

(a) the operator has the specific approval specified in the operations specifications and its aeroplanes are certificated for LVO and are equipped in accordance with this technical standard or an equivalent regulation accepted by the Executive Director;

(b) the operator has an approved training programme and the flight crews and supporting crews, as applicable, are trained and tested in LVO;

(c) the operator has established procedures to ensure LVO are conducted to the highest possible level of safety;

(d) a suitable system for recording approach or automatic-landing success and failure is established and maintained to monitor the overall safety of the operation;

(e) the ground-based equipment meets the LVO criteria for safe operation; and

(f) the low visibility operational zone is maintained in a sterile condition during LVO.

Note - *Failure to meet any of the above criteria or the certification standards described herein is cause for LVO operations specifications to be suspended*.

(3) The available approvals for LVTO operations are dependent upon the aircraft category and aerodrome equipment and may be -

(a) RVR not lower than 75m if using an approved lateral guidance system; and

(b) RVR not less than 125m for Category A, B and C aeroplanes or RVR not less than 150m for Category D and E aeroplanes if not using an approved lateral guidance system.

(4) The categories referred to in paragraph (3) above are established on the basis of 1.3 times the stall speed of the aeroplanes in the landing configuration at maximum certificated landing mass and are as follows -

(a) Category A - less than 91 knots indicated airspeed;

(b) Category B - 91 knots indicated airspeed or more, but less than 121 knots indicated airspeed;

(c) Category C - 121 knots indicated airspeed or more, but less than 141 knots indicated airspeed;

(d) Category D - 141 knots indicated airspeed or more, but less than 166 knots indicated airspeed; and

(e) Category E - 166 knots indicated airspeed or more, but less than 211 knots indicated airspeed.

Note - *In the event of low-visibility procedures being in force, the Air Navigation Services provider will report to the Executive Director details of all aeroplanes attempting an approach, the RVR visibility at the time, and the outcome of the approach attempt. This information will be used by the NCAA in investigation of approaches attempted outside of the operator's equipment and PIC limitations or approval.*

(5) CAT II/III limits may be found TS 91.07.5 of Document NAM-CATS-OPS 91.

2. Equipment requirements

(1) The operator of an aeroplane shall include the minimum equipment which shall be serviceable at the commencement of a LVTO or a CAT II or III approach in its operations manual.

(2) An operator shall establish procedures to ensure that the PIC satisfies him or herself that the status of the aeroplane and the relevant airborne systems thereof is appropriate for the specific operation to be conducted.

3. Facilities requirements

(1) The specific facilities required to ensure safe LVO involve both the aerodrome and the operator.

(2) No PIC of an aeroplane shall use an aerodrome for LVO, unless the aerodrome is approved for such operations by the appropriate authority of the State in which the aerodrome is located.

(3) The operator of an aeroplane intended to be used in LVO shall verify that low-visibility procedures have been established and are in force at the aerodromes where such operations are to be conducted.

(4) Criteria for the approval of an aerodrome to allow LVO to be conducted are -

(a) for low visibility take-offs with RVR of ≥125m (≥150m for Category D and E aeroplanes) to <400m -

(i) multiple RVR sources;

(ii) runway high intensity edge lights spaced 60m or less;

(iii) runway centreline lights spaced 15m or less and marking;

(iv) runway electrical multi-looping (multi-circuit design); and

(v) a secondary power supply;

(b) for low visibility take-offs with RVR ≥75m to <125m (<150m for Category D and E aeroplanes), in addition to those noted in sub-paragraph (a), a functioning lateral guidance system for take-off;

(c) for low visibility take-offs with RVR of ≥150m (≥200m for Category D and E aeroplanes) <400m –

(i) multiple RVR sources;

(ii) runway high intensity edge lights spaced 60m or less;

(iii) runway centreline lights spaced 30m or less and associated runway markings;

(iv) runway electrical multi-looping (multi-circuit design); and

(v) a secondary power supply, and

(d) for low visibility take-offs with RVR of ≥75m (≥125m for Category D and E aeroplanes) <125m –

(i) multiple RVR sources;

(ii) runway high intensity edge lights spaced 60m or less;

(iii) runway centreline lights spaced 15m or less and associated runway markings;

(iv) runway electrical multi-looping (multi-circuit design);

(v) a secondary power supply; and

(vi) a functioning lateral guidance system for take-off.

(5) The special requirements for the operator to conduct LVO are -

(a) the establishment of procedures and instructions to be used for LVTO and Category II and III operations that will ensure -

(i) the PIC establishes that the status of the visual and non-visual facilities is sufficient prior to commencing a LVTO or a Category II and III approach; and

(ii) the PIC confirms with the air traffic service unit, before commencing a LVTO or a Category II and III approach, that appropriate low-visibility procedures are in force and the aircraft has been issued the appropriate clearances;

(iii) a 90m visual segment is available from the cockpit at the start of the take-off run; and

(iv) the required RVR value has been achieved for all of the relevant RVR reporting points.

(b) the flight crew members are properly qualified to carry out a low-visibility take-off or a Category II and III approach; and

(c) the PIC ensures there are no MEL items or other aeroplane unserviceabilities that would disqualify the flight from attempting a LVO.

4. Personnel requirements

(1) Each operator applying for authorisation to conduct LVO shall establish and maintain an initial and recurrent flight and ground training and checking programme as specified in section 14 of TS 121.03.3 of Document NAM-CATS-OPS 121 that will ensure its flight crew are proficient in operating in such environment and shall publish its LVO training programme in its operations manual.

(2) The flight deck crew qualification requirements are specific to the operator and the type of aeroplane operated and the operator shall ensure that each flight deck crew member completes a flight check (skills test) before conducting LVTO or Category II or III operations and that subsequent proficiency checks include LVO take-offs and approaches.

121.08.33 OPERATION WITH HEAD-UP DISPLAYS OR VISION SYSTEMS

1. Introduction

(1) This TS provides guidance for the approval for use of head-up display or vision, (HUD), equivalent displays and vision systems intended for installation and operational use in aircraft engaged in commercial operations. These systems and hybrid systems may be installed and operated to enhance situational awareness or to obtain an operational credit such as lower minima for take-off, approach or landing operations. HUD and EVS may be installed separately or together as part of a hybrid system. Use of these systems during

instrument flight and any operational credit gained from their use requires approval from the Executive Director.

Note: *"Vision systems" is a generic term referring to the existing systems designed to provide images, i.e. EVS, SVS and CVS.*

(2) No pilot may use a HUD or EVS in flight in IMC unless such pilot has received the training and checking specified in this TS.

(3) No operator shall permit anyone to use a HUD or EVS in flight under IFR in an aircraft so equipped unless the aircraft has been approved for such flight as specified in this TS.

2. Head-up displays

(1) HUD may be used -

(a) to supplement conventional flight deck instrumentation; or

(b) as a primary flight display if certified for this purpose.

(2) An owner or operator who has been approved to use an HUD may -

(a) operate with reduced visibility or reduced RVR; or

(b) replace the guidance of certain ground facilities such as touchdown zone or centre line lights.

(3) The functions of an HUD may be provided by a suitable equivalent display: Provided that the appropriate airworthiness approval has been obtained for such a display.

(4) Ground training in the use of the HUD shall be accomplished at an approved training organisation (ATO). The training shall address all flight operations for which the HUD, or equivalent display is used.

(5) Flight training of at least two hours shall be accomplished using an aircraft or flight simulation training device (FSTD) equipped with the same type of HUD to be used in the aircraft. The training shall consist of normal, abnormal and emergency use of the equipment throughout all flight phases, a variety of take-off and approach conditions and shall include -

(a) pilot seat adjustment to attain and maintain appropriate viewing angles and verification of HUD operating modes;

(b) operations during critical flight events (ACAS TA/RA, upset and wind shear recovery, engine or system failure, etc.);

(c) crew co-ordination, monitoring and verbal call-out procedures for single HUD installations with head-down monitoring for pilot-not-equipped with HUD and head-up monitoring for pilot-equipped with HUD;

(d) crew co-ordination, monitoring and verbal call-out procedures for dual HUD installations with use of the HUD by the pilot flying the aircraft and either head-up or head-down monitoring by the other pilot; and

(e) use during low visibility operations, including taxi, take-off, instrument approach and landing in both day and night conditions. This training shall include the transition from head-down to head-up and head-up to head-down operations.

3. Vision systems

(1) Vision systems can display electronic real-time images of the actual external scene achieved through the use of image sensors such as. CVS, or display synthetic images, which are derived from the on-board avionics systems. Vision systems can also consist of a combination of these two systems, called combined vision systems. The information from vision systems may be displayed head-up or head-down. Such system may display electronic real-time images of the external scene using the EVS component of the system. Operational credit may be granted to vision systems which are appropriately qualified.

(2) Light emitting diode (LED) lights may not be visible to infrared-based vision systems. Operators of such vision systems must acquire information about the LED implementation programmes at aerodromes where they intend to operate.

(3) The use of EVS -

(a) shall allow the pilot to view an image of the external scene obscured by darkness or other visibility restrictions;

(b) shall allow acquisition of an image of the external scene earlier than with natural, unaided vision, hence providing for a smoother transition to references by natural vision;

(c) may improve situational awareness;

(d) may qualify for operational credit if the information from the vision system is presented to the pilots in a suitable way and the necessary airworthiness approval and specific approval from the Executive Director has been obtained for the combined system; and

(e) enable pilots to detect other aircraft on the ground, terrain or obstructions on or adjacent to runways or taxiways.

(4) For an operator who wishes to use EVS in IFR flight, EVS ground training shall be accomplished at an ATO or as part of an approved training programme. The programme shall include, as a minimum, the following-

(a) an understanding of the system characteristics and operational constraints;

(b) normal procedures, controls, modes and system adjustments;

(c) EVS limitations;

(d) failure modes of the EVS and the impact of the failure modes or limitations upon crew performance, in particular, for two-pilot operations; and

(e) any effects that weather, such as low ceilings and visibilities, may have on the performance of an EVS.

(5) For an operator who wishes to use EVS in IFR flight, flight training shall be accomplished using an aircraft or FSTD equipped with the same type of EVS to be used in the aircraft. The training shall consist of normal, abnormal and emergency use of the equipment throughout all flight phases, a variety of approaches and take-off conditions and shall include -

(a) enhanced vision display during low visibility operations, including taxi, take-off, instrument approach and landing and system use for instrument approach procedures in both day and night conditions;

(b) crew co-ordination and monitoring procedures and pilot call-out responsibilities;

(c) transition from enhanced imagery to visual conditions during the runway visual acquisition; and

(d) rejected landing due to loss of visual cues of the landing area, touchdown zone or rollout area.

4. HUD and vision systems approval

(1) For operations with an automatic landing system, an HUD or an equivalent display, a vision system or a hybrid system, the following requirements shall be met -

(a) an operator shall obtain operational and airworthiness approval for the use of a HUD or EVS in IFR flight;

(b) for enhanced situational awareness, the installation and operational procedures shall ensure that EVS operations do not interfere with normal procedures or the operation or use of other aircraft systems;

(c) HUD or EVS. as applicable, installed in aircraft in the State of Manufacture shall meet the airworthiness requirements of such State: Provided an owner or operator can submit evidence of meeting the requirements of the State of Manufacture, airworthiness approval for the use of the HUD or EVS, as applicable, in that aircraft shall be given;

(d) prior to installing a HUD or EVS as applicable, as a retrofit, an owner or operator shall contact the Authority to determine the airworthiness requirements associated with its approval for use;

(e) an airworthiness approval issued to an operator for an aircraft shall be valid for any other aircraft of the same type operated by such operator: Provided the HUD or EVS equipment, as applicable, is the same in each aircraft;

(f) an airworthiness approval issued to an aircraft type may be extended to other aircraft types: Provided the Executive Director is of the opinion that the other aircraft types have sufficient commonality with the approved aircraft and the HUD or EVS equipment, as applicable, is the same in all the aircraft;

(g) pilots shall pass a knowledge test following the ground training and a skills test following the flight training, both of which shall be administered by the operator or an authorised person. Upon successful completion of the skills test, the operator shall record the candidate's qualification to operate with a HUD or EVS, as applicable, in his or her training records;

(h) annual recurrent training in the use of a HUD or EVS, as applicable, shall be accomplished; and

(i) systems that are not used for an operational credit or otherwise critical to the aerodrome operating minima, such as vision systems used to enhance situational awareness may be used without a specific approval. The standard operating procedures for these systems shall be specified in the operations manual.

Note: *Operational credit includes:*

1. *for the purpose of an approach ban, a minima below the aerodrome operating minima;*
2. *reducing or satisfying the visibility requirements; or*
3. *requiring fewer around facilities as compensated for by airborne capabilities.*

(2) For operations with aeroplanes equipped with automatic landing systems, an HUD or equivalent displays. EVS, SVS or CVS, the classifications of instrument approach procedure shall not be affected.

(3) To obtain specific approval for operational credit, the vision systems compliance list shall include the information that is relevant to the specific approval requested and the registration marks of the aircraft involved. If more than one type of aircraft or fleet is included in a single application a completed compliance list shall be included for each aircraft or fleet. The following items shall be covered in a vision systems compliance list-

(a) reference documents used in compiling the submission for approval;

(b) flight manual;

(c) feedback and reporting of significant problems;

(d) requested operational credit and resulting aerodrome operating minima;

(e) operations manual entries including MEL and standard operating procedures;

(f) safety risk assessment;

(g) training programmes; and

(h) continuing airworthiness.

Note: *More detailed information and guidance on automatic landing systems, HUD or equivalent displays, EVS, SVS, and CVS is contained in AIC for All-Weather Operations.*

Note: ICAO All Weather Operations Doc 9365

***Note**: Guidance on safety risk assessments is contained in the AIC for Safety Management System (SMS).*

121.08.34 OPERATIONS WITH ELECTRONIC FLIGHT BAGS

1. Introduction

(1) This technical standard provides guidance for the approval for use of installed and portable electronic flight bags (EFB).

(2) Installed EFBs may be incorporated during -

(a) an aeroplane type design;

(b) by a change to the type design; or

(c) added by a STC.

(3) Portable EFBs are not considered to be part of the certified aeroplane configuration. They do not require airworthiness approval but do require an operational approval.

2. Airworthiness approval

(1) Portable EFBs that do not require airworthiness approval -

(a) are generally commercial-off-the-shelf (COTS)-based computer systems used for aircraft operations (e.g. laptop, tablet, PC);

(b) are not attached to an aeroplane mounting device;

(c) are considered to be a controlled portable electronic device (PED);

Note - *A controlled PED is a PED that is subject to administrative control by the company. This will include, inter alia, tracking the location of the devices to specific aeroplanes or persons and ensuring that no unauthorised changes are made to the hardware, software or databases. A controlled PED will also be subject to procedures to ensure that it is maintained to the latest amendment state.*

(d) may only connect to aircraft power through a certified power source;

Note - *The EFB power source should be designed such that it may be deactivated at any time. Where there is no possibility for the flight crew to quickly remove or*

unplug the power to the EFB system, a clearly labelled and conspicuous means (e.g. on/off switch) should be provided. Circuit breakers are not to be used as switches; their use for this purpose is prohibited.

(e) are normally without aeroplane data connectivity except under specific conditions; and

Notes - *Data connectivity of the EFB to other aeroplane systems is not authorised except if the EFB system is connected to -*

1. *a system completely isolated from the avionics/aeroplane systems (e.g. EFB system connected to a transmission medium that receives and transmits data for Aircraft Administrative Communications (AAC) purposes for usage on the ground only); and*

2. *a certified data link to receive data only from aeroplane systems, where the data link, through the certification process, has an approved security device to protect the aeroplane systems from receiving any data from the EFB system and from the installation or use of unauthorised applications and data. Through the certification process, this data link should also have been demonstrated to protect the installed aeroplane systems from adverse effects due to EFB system failures. Subject to the above provisions, there is no further evaluation required when* connecting the EFB system to the aeroplane data link port.

(f) shall be secured during critical phases of flight.

(2) Even though portable EFBs do not require an airworthiness approval as they are "non-installed equipment", electro-magnetic interference (EMI) demonstrations, batteries/power sources, data connectivity and rapid depressurisation shall be assessed if the Executive Director so determines.

(3) For EFBs other than those addressed in paragraph (1), the entire EFB, or some elements of the EFB, shall require an airworthiness approval. Elements to be subject to airworthiness approval are determined upon analysis of their interface with aeroplane systems and equipment. These EFBs shall be included as part of the minimum equipment list (MEL), if applicable.

(4) EFBs integrated into the aeroplane as part of its initial design or installed later as a retrofit in accordance with the requirements of the State of Manufacture shall be given approval: Provided the operator can submit evidence of having met the requirements of the State of Manufacture.

(5) For aeroplanes without the evidence specified in paragraph (4), an operator shall contact the NCAA to determine the airworthiness requirements associated with its approval for use prior to installing an EFB as a retrofit.

3. Operational approval

(1) An operator transitioning to a paperless flight deck (i.e., removal of charts, manuals, etc.) shall complete the requirements specified in paragraphs (2) to (6), inclusive, prior to operating with an EFB.

(2) Operational approval is contingent on the operator completing ground training for personnel using the EFB system. The programme shall include, as a minimum -

(a) an overview of the system architecture;

(b) pre-flight checks of the system;

(c) limitations of the system;

(d) the use of each operational function on the EFB;

(e) restrictions on the use of the system, including when some or all of the EFB functions are not available;

(f) the conditions, including phases of flight, under which the EFB should not be used;

(g) procedures for cross-checking data entry and computed information;

(h) human performance considerations on the use of the EFB; and

(i) additional training for new applications, new features of current applications or changes to the hardware configuration.

(3) EFB operations with no paper backup shall have a means of mitigation against the effects of a failure or malfunction of the EFB. Mitigation against EFB failure or impairment may be accomplished by a combination of -

(a) system design;

(b) separate and backup power sources for the EFB;

(c) redundant EFB applications hosted on different EFB platforms;

(d) paper products carried by selected crew members;

(e) complete set of paper backups on the flight deck; and/or

(f) procedural means.

(4) The operator shall assign responsibility for the administration and physical control of EFBs and the associated software; in particular, the activation of amendments to the hardware and software.

(5) The operator shall ensure that the EFB is protected from unauthorised intervention.

(6) The operator shall ensure that the EFB is maintained in accordance with the manufacturer's recommended programme. The operator shall establish procedures for action to be taken when an EFB is out of service unless provided for in a MEL.

(7) Prior to use of a portable EFB, an assessment shall be made of how the device will be used on the flight deck. Safe stowage, crashworthiness, security and use under normal environmental conditions, including turbulence, shall be addressed by the operator.

(8) Whether the EFB is portable or integrated with the aeroplane, the operator shall carry out an assessment of the human-machine interface and aspects of crew coordination when using the EFB. Whenever possible the EFB/user interface should be consistent with, but not necessarily identical to, the flight deck design philosophy. The assessment should include -

(a) general considerations including flight crew member workload, integration of the EFB into the flight deck, display and lighting issues, system shutdown and system failures;

(b) physical placement issues, including stowage area, use of unsecured EFBs, design and placement of the mounting cradle;

(c) consideration of possible interference with aeroplane controls, outside vision, view of other flight deck displays, oxygen mask access, egress, crew cooling and speaker sound;

(d) software considerations, including ease of access to common and time-critical system functions, consistency of symbols, terms and abbreviations, legibility of text, system responsiveness, use of colour, display of system status, error messages, management of multiple applications and use of active regions;

(e) hardware considerations, including controls and input devices and flight crew accessibility to these devices; and

(f) application-specific considerations, including organisation and appearance of information, system detection of data entry errors and user interaction with applications.

(9) If an EFB generates information similar to that provided by existing flight deck systems, procedures should clearly identify -

(a) which information source will be primary;

(b) which source will be used for back-up information;

(c) under what conditions the back-up source will be used; and

(d) what actions will be taken when information provided by an EFB does not agree with that from other flight deck sources or, if more than one EFB is used, when one EFB disagrees with another.

(10) Upon receiving airworthiness approval and meeting the requirements of paragraphs (2) to (9), inclusive, the operator shall undergo a six-month self-evaluation period during which paper backups of the materials on the EFB shall be carried. The back-up paper materials shall be readily available to the flight crew members during flight time.

(11) If, following the six-month evaluation period, the operator is satisfied that the equipment and procedures are adequate and the crew members, maintenance personnel and other persons involved in the use of the EFB are sufficiently trained and knowledgeable, the operator shall submit a request to the NCAA seeking approval to use the EFB.

(12) The NCAA assessment of an application to use EFBs will be based upon -

(a) confirmation that the requirements of paragraphs (2) to (9), inclusive, have been met;

(b) a demonstration of system reliability and that information provided will not be inaccurate or misleading;

(c) that the operator has established a means to carry out quality assurance approval of data content prior to installation on the EFB; and

(d) satisfactory completion of a demonstration flight using the EFB.

(13) The authorisation to use EFBs shall contain any restrictions or limitations that the Executive Director deems necessary in the interests of safety.

(14) If the EFB provides electronic displays that replace paper products formerly required for safe flight operations or is a source for other required information or displays, operations of the EFB should be described in the Operations Manual.

(15) The EFB risk assessment to assess the risks associated with the use of each EFB function shall be done in accordance with Part 140 and be performed before the beginning of the approval process (if applicable) and its results shall be reviewed on a periodic basis.

(16) The EFB management system is responsible for hardware and software version and configuration management, maintenance of EFB security and integrity in accordance with documented policies and procedures and shall have an appropriately trained designate to be responsible for the system.

121.08.35 SEATS, SEAT SAFETY BELTS, HARNESSES AND CHILD RESTRAINT DEVICES AND CARRIAGE OF INFANTS

(1) An operator shall not carry an infant on board an aeroplane unless such infant is at all times properly secured in the arms or on the lap of an adult passenger, or the aeroplane is equipped with a child restraint system or a sky cot.

(2) If a sky cot is used, it shall be -

(a) secured to prevent it from moving under the maximum acceleration during flight;

(b) fitted with a restraining device to prevent an infant being thrown from such sky cot under maximum acceleration during flight;

(c) used only during noncritical phases of flight; and

(d) positioned in such a way that it does not prevent or hinder the movement of adjacent passengers or block exits.

(3) An infant shall not be carried behind a bulkhead during critical phases of flight and during turbulence, unless restrained in a car type infant seat.

(4) A child restraint system may be used provided that –

(a) an infant is not carried behind a bulkhead unless the child restraint device is used during critical phases of flight and during turbulence; and

(b) that car type infant seats are certified for carriage on board an aeroplane.

(5) Restraining devices designed to be secured to a passenger seat by means of a single lap strap shall –

(a) be secured at critical phases of flight to the passenger seat in accordance with the manufacturer's instructions;

(b) face in the same direction as the passenger seat;

(c) does not protrude beyond the forward position of the passenger seat cushion on which it rests;

(d) be secured to the passenger seat, even when it is unoccupied by a child;

(e) be capable of being removed from the aircraft in an emergency evacuation;

(f) be positioned in such a way that it does not prevent or hinder the movement of adjacent passengers or block exits;

(g) where possible, is not placed in an aisle seat, depending on cabin configuration;

(h) be used in accordance with infant weight limitations specified for such device; and

(i) be fitted with a single release harness, which secures the infant's lap, torso and shoulders, and is designed so that the child can easily be secured in or removed from it.

(j) not be located in the same row or row directly forward or aft of an overwing emergency exit or in the same row as any other exit unless such exit and row are separated by a bulkhead.

(6) When an infant is carried in the arms or on the lap of an adult passenger:

(a) the seat belt, when required to be worn, shall be fastened around the passenger carrying or nursing the infant but not around the infant; and

(b) the name of the infant shall be bracketed on the passenger list with the name of the person carrying or nursing the infant.

121.08.39 CARRY-ON BAGGAGE

1. Procedures for stowing of carry-on baggage

(1) Procedures established by an operator to ensure that carry-on baggage is adequately and securely stowed shall take account of the following -

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

(b) mass limitations placarded on or adjacent to stowages shall not be exceeded;

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

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

(e) baggage placed in lockers shall not be of such size that they prevent latched doors from being closed securely;

(f) baggage shall not be placed where it will impede access to emergency equipment; and

(g) checks shall be made before take-off, before landing and whenever the PIC illuminates the fasten seat belts sign, or otherwise so orders, to ensure that baggage is stowed where it cannot impede evacuation from the aeroplane or cause injury by falling, or other movement, as may be appropriate to the phase of flight.

(2) All baggage which is required to be brought into the cabin area shall be -

(a) of a size as established by the operator but shall not exceed the dimensions 56cm × 36cm × 23cm;

(b) of a weight as established by the operator in compliance with the weight limitation of the aircraft; and

(c) of an amount as established by the operator

121.08.40 HOLD BAGGAGE SCREENING

1. Applicability

The requirements prescribed in this technical standard applies to -

(a) the operator of a large commercial air transport aeroplane, engaged in international civil aviation operations; and

(b) the operator of a commercial air transport aeroplane engaged in scheduled commercial air service;

2. Definitions

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

"hold baggage" means the personal property of passengers or crew carried in the hold of an aircraft by agreement with the operator and refers to both originating baggage and transfer baggage; and

"mishandled baggage" means baggage involuntarily or inadvertently separated from the passenger or crew.

3. General principles for the handling of hold baggage

(1) No hold baggage shall be loaded onto an aircraft unless it has been screened in accordance with regulations prescribed in this Part and Part 139 respectively.

(2) The operator or holder of an aerodrome licence referred to in section 1 must ensure that all hold baggage is subjected to security screening prior to being placed on board an aeroplane.

(3) The screening of hold baggage must be carried out either before, during or after check-in.

(4) Transfer baggage may only be carried if such baggage is positively matched with the passenger after he/she has been accepted for the flight.

(5) Areas that may be considered for hold baggage screening point locations are -

(a) point of entry into passenger terminal;

(b) point of entry into check-in area;

(c) point of check-in; and

(d) post check-in.

(6) It must be noted that these location points have their advantages and disadvantages and must be selected appropriately and according to the airport infrastructure. The processes thereof shall be carefully developed taking into account the flow of baggage system. These processes shall be documented and made part of the hold baggage process which shall be included in the Airport Security Programme.

(7) The four areas referred to in paragraph (5)(a) to (d) above must all provide for a decent searching point, reconciling the passenger and his or her baggage for searching purposes should a suspicious item/article be identified.

4. Check in and reconciliation of hold baggage

(1) In addition to other requirements prescribed in the CAR and in the associated technical standards, the following minimum requirements must be followed during check-in -

(a) hold baggage shall not be accepted for carriage by air unless the relevant passenger is present and has been questioned to help detect situations in which a device may have been placed in the passenger's hold baggage without his or her knowledge;

(b) should questioning of the passenger raise any doubts about packing or supervision of the hold baggage, then the hold baggage shall be subjected to extra security screening;

(c) hold baggage must only be accepted from ticketed passengers who have been issued with boarding/similar pass and by a responsible or authorised representative of the air carrier; and

(d) hold baggage labels and tags used by operators must be strictly controlled to minimise theft and their subsequent use thereof to introduce hold baggage into the baggage handling system at a point beyond the screening process.

(2) The operator shall conduct baggage reconciliation and authorisation confirming or ensuring that the hold baggage that has been loaded belongs to passengers of the relevant flight who have actually boarded the aircraft and that the hold baggage has been subjected to the necessary security controls and is authorised for loading on that aircraft.

(3) Special procedures shall be implemented to ensure that in the event of a passenger disembarking at a station earlier than his or her final destination, his or her hold baggage is removed from the aeroplane.

(4) Mishandled baggage shall be dealt with and transported according to the procedures prescribed in the operator's security programme for mishandled baggage.

(5) Hold baggage of a passenger who is denied boarding for security reasons, or for refusal to be screened or who has not boarded the aeroplane, must be off-loaded. The same applies to a passenger who decides, for any reason whatsoever, to disembark after boarding. This requirement is in addition to, and shall be applied irrespective of, other security measures such as screening aimed at ensuring that the hold baggage does not contain any explosives or explosive devices.

(6) Any hold baggage intended for carriage on passenger flights originating from off-airport check-in facilities must be subjected to higher security measures than those carried out at airport check-in facilities as per the agreed upon and approved Standard Operating Procedure between the operator and the NCAA. Any operator wishing to carry out off-airport check-in must first develop written procedures and contingency plan and shall submit those for approval by the Executive Director. Off-airport check-in shall not be carried out unless there has been prior written approval by the Executive Director.

5. Minimum requirements for screening of hold baggage

(1) The operator referred to in section 1 shall establish written procedures to ensure that hold baggage is screened taking into account the minimum requirements prescribed in this technical standard.

(2) The under-mentioned security measures shall be applied either individually, except the method prescribed in sub-paragraph (a), or in combination, but never exclusively, to screen hold baggage checked in for carriage by air -

(a) searching by hand or physical search;

(b) screening by x-ray machine;

(c) screening by explosive trace detection or other similar acceptable and approved devices; or

(d) applying other means, both technical and bio sensory as vapour, trace detectors and dogs.

(3) When using the method of physical search or search by hand, the following requirements shall be followed -

(a) the search shall be done in the presence of the passenger;

(b) the hold baggage shall be opened by or in front of the passenger;

(c) the search shall be conducted in a systematic manner, by searching between each layer of clothing and other items packed within the hold baggage;

(d) other loose bags within the hold baggage shall also be opened and searched; and

(e) upon completion of the search, the passenger shall repack the hold baggage before leaving the search area.

(4) When using the method of screening by x-ray machine, the following requirements shall be followed -

(a) the operator shall ensure that all personnel handling the machine are adequately trained to operate the machine, and that such staff are able to clear alarms in terms of the protocols and layout of the system;

(b) the personnel operating the x-ray machine shall rotate between positions at least every twenty minutes; and

(c) where the x-ray machine is unserviceable or cannot be used for any other reason, measures shall be put in place for an appropriate supplementary procedure to be carried out and in line with the standard operating procedure.

(5) The screening of hold baggage shall be conducted by an authorised security officer duly qualified and certified in terms of the CAR to perform such function.

(6) Should a suspicious item be detected in the hold baggage, the passenger must be summoned to account for such baggage, and thereafter the baggage must be subjected to additional security checks. All suspicious items or baggage shall be kept aside and not loaded into the aeroplane until they are subjected to additional security measures and are cleared.

(7) Hold baggage that has been subjected to the screening process -

(a) must be kept under the supervision and control of security or authorised agent;

(b) must be protected from unauthorised access until it is claimed by the passenger at final destination;

(c) must be kept under constant surveillance from time of acceptance until loaded in the aeroplane and if transported by vehicle, it shall be enclosed and capable of being locked. It may be necessary in increased threat situations to provide a security escort from the baggage make-up area to the aeroplane; and

(d) must not be mixed with unscreened baggage.

(8) No hold baggage shall be exempted from screening.

(9) The levels of screening applied at any period shall be determined by the level of threat and detection of any device intended to commit an act of unlawful interference.

6. Procurement and maintenance of security screening equipment

(1) Any equipment if operated by an operator to screen hold baggage, shall comply with the requirements specified in the National Civil Aviation Security Plan (NCASP).

(2) Prior to procurement of security screening equipment for use in compliance with this technical standard, a request shall be made to the Chief, Civil Aviation Security for the minimum specifications and approval of the equipment.

(3) The Chief, Civil Aviation Security shall approve the hold baggage screening equipment after the operator has met all required processes ranging from procurement, implementation and development of relevant written procedures.

(4) The screening equipment must be kept in a serviceable condition and tested at all times, according to the requirements prescribed in the National Civil Aviation Security Plan.

(5) Records of maintenance and testing must be kept and made available for inspection on request by the Executive Director.

(6) A contingency plan must be put in place to be applied in case of malfunction of the screening equipment.

7. Monitoring

Incidents, discrepancies and non-compliances shall be recorded and reported to the Aviation Security Supervisor or relevant authority.

121.08.43 BRIEFING OF PASSENGERS

1. Standard safety briefing

The standard safety briefing shall consist of an oral briefing provided by a crew member or by audio or audio-visual means in at least the English language or as required by the Executive Director, which includes the following information as applicable to the aeroplane, equipment and operation -

(a) prior to take-off -

(i) when, where, why and how carry-on baggage is required to be stowed;

(ii) the fastening, unfastening, adjusting and general use of safety belts or safety harnesses;

(iii) when seat backs must be secured in the upright position and tray tables must be stowed;

(iv) the location of emergency exits;

(v) the floor proximity emergency escape path lighting system;

(vi) the location, purpose of, and advisability of reading the safety features card;

(vii) the regulatory requirement to obey crew instructions regarding safety belts and no smoking or "Fasten Seat Belt" and "No Smoking" signs and the location of these signs;

(viii) where cabin crew members are not required, the location of any emergency equipment the passenger may have a need for in an emergency situation such as the ELT, fire extinguisher, survival equipment, including the means to access it if in a locked compartment, first aid kits and life rafts;

(ix) the use of passenger operated portable electronic devices;

(x) the location and operation of the fixed passenger oxygen system, including the location and presentation of the masks; the actions to be performed by the passenger in order to obtain the mask, activate the flow of oxygen and correctly don and secure the mask. This will include a demonstration of their location, method of donning, including the use of elastic band, and operation and instruction on the priority for persons assisting others; and

(xi) the location, use of and when to inflate life jackets, including how to remove them from stowage/packaging, and a demonstration of the method of donning and inflation. This briefing may be completed after take-off but prior to the overwater portion of the flight;

(b) after take-off -

(i) that smoking is prohibited; and

(ii) the advisability of using safety-belts or safety harnesses during flight;

(c) in-flight when the "Fasten Seat Belt" sign has been turned on for reasons of turbulence -

(i) when the use of seat belts is required; and

(ii) when the level of turbulence is anticipated to exceed light, the requirement to stow carry-on baggage;

(d) prior to landing -

(i) carry-on baggage stowage requirements;

(ii) correct seat back and chair table positioning;

(iii) on flights scheduled for four hours duration or more, the location of emergency exits; and

(iv) the seat belt requirement; and

(e) after landing, prior to gate arrival -

(i) the no smoking requirement; and

(ii) that there will be guidance given with respect to -

(aa) the safest direction and most hazard-free route for passenger movement away from the aeroplane following disembarkment; and

(bb) any dangers associated with the aeroplane type such as pitot tube locations, propellers or engine intakes.

Note - *The safety message of the briefing may not be diluted by the inclusion of any service information, advertising or non-related comments that would affect the integrity of the safety briefing.*

2. Individual safety briefing

The individual safety briefing shall include -

(a) any information contained in the standard safety briefing and the safety features card that the passenger would not be able to receive during the normal conduct of that safety briefing; and

(b) additional information applicable to the needs of that person as follows -

(i) the most appropriate brace position for that passenger in consideration of his/her condition, injury, stature and/or seat orientation and pitch;

(ii) the location to place any service animal that accompanies the passenger;

(iii) for a mobility-restricted passenger who needs assistance in moving expeditiously to an exit during an emergency -

(aa) a determination of what assistance the person would require to get to an exit;

(bb) the route to the most appropriate exit;

(cc) the most appropriate time to begin moving to that exit; and

(dd) a determination of the most appropriate manner of assisting the passenger;

(iv) for a visually impaired person -

(aa) detailed information of and facilitating a tactile familiarisation with the equipment that he/she may be required to use;

(bb) advising the person where to stow his/her cane if applicable;

(cc) the number of rows of seats between his/her seat and his/her closest exit and alternate exit;

(dd) an explanation of the features of the exits; and

(ee) if requested, a tactile familiarisation of the exit;

(v) for a comprehension-restricted person: while using the safety features card, pointing out the emergency exits and alternate exits to use and any equipment that he/she may be required to use;

(vi) for persons with a hearing impairment -

(aa) while using the safety features card, point out the emergency exits and alternate exits to use and any other equipment that the person may be required to use; and

(bb) communicating detailed information by pointing, face-to-face communication permitting speech reading, pen and paper, through an interpreter or through their attendant;

(vii) for a passenger who is responsible for another person on board, information pertinent to the needs of the other person, as applicable -

(aa) in the case of an infant -

(A) seat belt instructions;

(B) method of holding infant for take-off and landing;

(C) instructions pertaining to the use of a child restraint system;

(D) oxygen mask donning instructions;

(E) recommended brace position; and

(F) location and use of life preservers, as required;

(bb) in the case of any other person -

(A) oxygen mask-donning instructions;

(B) instructions pertaining to the use of a child restraint system; and

(C) evacuation responsibilities; and

(viii) for an unaccompanied minor, instructions to pay close attention to the normal safety briefing and to follow all instructions. A passenger that has been provided with an individual safety briefing need not be re-briefed following a change in crew if the crew member that provided the individual safety briefing has advised a member of the new crew of the contents of that briefing, including any information respecting the special needs of that passenger. A passenger may decline an individual safety briefing.

3. Passenger preparation for emergency landing

The emergency briefing provided in the event of an emergency where time and circumstances permit shall consist of instructions pertaining to -

(a) safety belts/safety harnesses;

(b) seat backs and chair tables;

(c) carry-on baggage;

(d) safety features cards;

(e) brace position (how to brace, when to assume position, how long to remain);

(f) if applicable, life preservers;

(g) location of exits;

(h) if applicable, evacuation procedures for an occupant of a child restraint system; and

(i) the removal of any other item that may cause harm to passengers during evacuation; i.e. sharp objects, high heeled shoes, pencils, etc.

121.08.44 SAFETY FEATURES CARD

The safety features card shall contain the following information as applicable to the aeroplane and equipment carried-

(a) general safety information including -

(i) smoking is prohibited on board the aeroplane;

(ii) each type of safety belt or safety harness installed for passenger use, including when to use, and how to fasten, tighten and release;

(iii) where carry-on baggage must be stowed for take-off and landing and any other related requirements and restrictions pertinent to that particular aeroplane; and

(iv) correct positioning of seat backs and chair tables for take-off and landing;

(b) emergency procedures and equipment including -

(i) fixed passenger oxygen system showing -

(aa) mask location and presentation; the actions to be performed by the seated passenger in order to obtain the mask, activate the flow of oxygen and correctly don and secure the mask; and

(bb) priority for persons assisting others with oxygen;

(ii) for aeroplanes where cabin crew members are not carried or are otherwise exempted from being carried-

(aa) location of first aid kits;

(bb) location of fire extinguishers that would be accessible to the passengers;

(cc) location of ELTs; and

(dd) location of survival equipment and if the stowage compartment is locked, the means of access or location of the key;

(iii) passenger brace position for impact, as appropriate for each type of seat and restraint system installed for passenger use; including the brace position for an adult holding an infant;

(iv) the location, operation and method of using each emergency exit type on the aeroplane, including identification of those emergency exits known to be rendered unusable in a ditching or because of the aeroplane configuration such as a combi configuration;

(v) the safest direction and most hazard-free escape route for passenger movement away from the aeroplane following evacuation;

(vi) the attitude of the aeroplane while floating;

(vii) location of life preservers and correct procedures for removal from stowage/packaging; donning and use of the life jacket for adult, child and infant users, including when to inflate;

(viii) location and use of life rafts;

(ix) location, removal and use of flotation devices; and

(x) the form, function, colour and location of any floor proximity emergency escape path lighting system that is installed; and

(c) the safety features card shall bear the name of the operator and the aeroplane type and shall contain only safety information that is -

(i) accurate for the aeroplane type and configuration in which it is carried and in respect of the equipment carried;

(ii) presented with clear separation between each instructional procedure. All actions required to complete a multi-action procedure to be presented in correct sequence and the sequence of actions to be clearly identified; and

(iii) depicted in a clear and distinct manner.

121.09.1 GENERAL REQUIREMENTS

1. General

(1) Operations Using Other than Approved Performance Data - Contaminated Runway

An operator may elect to use performance data from a source other than the aeroplane flight manual when operating an aeroplane to or from a contaminated runway: Provided -

(a) the aeroplane shall be operated in accordance with a contaminated runway operations supplement to the flight manual that has been prepared or approved by the aeroplane manufacturer;

(b) take-off mass limitations may be based on an engine-out condition using a 15-foot screen height, provided the area to be used for first segment climb contains no obstacles taller than 15 feet;

(c) where the manufacturer permits, stopping distance calculations may include credit for reverse thrust on the operative engine;

(d) operation at reduced thrust settings shall not be permitted and Vmc shall be based on full-rated thrust;

(e) the approved operations manual shall set out procedures for operations using contaminated runways; and

(f) pilot and, where applicable, flight operations officer ground training shall address contaminated runway operations.

(2) Operations Using Other than Approved Performance Data - Reciprocating-Engine Aeroplanes in Cargo-only Operations.

An operator may elect to use performance data from a source other than the aeroplane flight manual when operating a reciprocating-engine aeroplane during cargo-only operations from or to unprepared surfaces: Provided -

(a) the operator's approved operations manual sets out the programme for operations involving unprepared surfaces. The programme shall include -

(i) pilot-in-command training, checking and experience requirements, which shall include -

(aa) at least 100 hours on type;

(bb) completion of a course of ground and flight training covering topics such as take-off and landing surface characteristics, obstacle assessment and interpretation of pertinent aeroplane data;

(cc) completion of at least 25 hours of line indoctrination involving unprepared surface operations; and

(dd) passing a line check covering unprepared surface operations;

(b) procedures for company operational approval for unprepared surface operations; and

(c) procedures for assessing and operating from/to unprepared surfaces and unfamiliar approach and departure routes.

2. Take-off mass limitations - accelerate-stop distance

An operator may operate a reciprocating-engine aeroplane where the accelerate-stop distance required exceeds the accelerate-stop distance available: Provided the operator restricts the aeroplane to no more than 9 passenger seats being occupied.

3. Net take-off flight path - visual obstacle avoidance

An operator may conduct a departure of an aeroplane without determining net take-off flight path for a reciprocating-engine aeroplane when visual obstacle avoidance is possible: Provided the following conditions are met -

(1) Obstacle Assessment -

(a) the operator shall obtain the best available data concerning obstacles in the proposed take-off path. Transient obstacles (such as construction equipment or moored watercraft, etc.) shall be considered when they are estimated to lie within 300 feet of the centreline of the proposed take-off path; and

(b) where the precise height, bearing and distance of an object is not known (such as objects depicted on a topographical map), the operator shall use a reasonable estimate for performance calculations. Calculations shall clearly indicate where estimated information is used;

(2) Departure Planning -

(a) the person responsible for operations or his/her delegate shall establish a company engine-out departure plan using procedures set out in the approved operations manual, including at least the following -

(i) obstacle assessment;

(ii) aeroplane performance, including turn radii; and

(iii) visual reference points to be used during the departure route;

Note - *In all cases the operator shall retain the departure plan for audit purposes.*

(b) prior to commencing a take-off, the PIC shall, in consideration of the current winds, density altitude and aeroplane mass, satisfy himself or herself that the departure plan to be followed in the event of an engine failure on take-off avoids all obstacles in the departure path by either 35 feet vertically or 95 metres horizontally; and

(c) in considering visual contact with the controlling obstacles during the departure phase, an operator shall establish to the satisfaction of the Executive Director that, taking into account flight deck angle and alterations in the field of view during turns,

the flight crew will be able to maintain continuous visual contact with all significant obstacles located within the departure route.

121.11.1 REQUIREMENT FOR QUALITY MANAGEMENT SYSTEM

1. Definitions

The terms used in this technical standard have the following meaning -

(a) **"accountable manager"** means the person designated as specified in CAR 121.06.2(4) and who has overall responsibility for the operation of the company (CEO or equivalent);

(b) **"quality manager"** means the manager responsible for the implementation, management and monitoring of the quality system and for requesting corrective action;

(c) **"audit"** means a methodical, planned review used to determine how a business is being conducted and compares the results with how that business should have been conducted according to regulations and established procedures;

(d) **"inspection"** means the act of observing a particular event or action, to ensure that correct procedures and requirements are followed during the accomplishment of that event or action. The primary purpose of an inspection is to verify that established standards are followed during the observed event or action; and

(e) **"quality assurance (QA)"** means all those planned and systematic actions necessary to provide adequate confidence that operational and maintenance practices satisfy prescribed requirements.

2. Quality management system (QMS) requirements

The QMS shall -

(a) ensure the adequacy of operational and maintenance activities in maintaining compliance with requirements, standards and operational procedures;

(b) specify the basic structure of the quality system applicable to the operation and be structured according to the size and complexity of the operation to be monitored; and

(c) as a minimum, address the following -

(i) establishment of the objectives of the QA programme, which are to meet the following criteria -

(aa) the objectives must be written for quality;

(bb) the objectives must be specific, measureable, attainable, realistic and time-based; and

(cc) the achievement of the objectives must be measured and tracked;

Note - *The QA objectives are not simply related to safety goals but are also part of the strategic and business objectives of the organisation; for example, improve the turn-around time of the aircraft to 20 minutes on domestic flights without deviations from the standards*.

(ii) how to ensure meeting the provisions of the CAR;

(iii) how to ensure meeting the operator's additional standards and operating procedures;

(iv) how to ensure meeting the operator's quality policy;

(v) assignment of the person or persons with the responsibility for the development, establishment and management of the quality system;

(vi) what documentation, including manuals, reports and records are required in support of the QA programme and how they are to be controlled;

(vii) the quality processes and procedures to be employed in support of the QA programme;

(viii) the establishment and implementation of a schedule of the monitoring process;

(ix) the procedures to be utilised in effecting the QA programme, including -

(aa) audit procedures;

(bb) reporting procedures; and

(cc) follow-up and corrective action procedures;

(x) the recording system; and

(xi) the training syllabus.

3. QMS policy

An air operator shall establish a formal, written quality policy statement, constituting a commitment by the accountable manager as to what the quality system is intended to achieve. The quality policy should -

(a) reflect the commitment to the goal of achieving and continuing with compliance with the regulatory requirements together with any additional standards specified by the operator; and

(b) reflect the accountable manager's commitment to -

(i) appoint resources to manage the system;

(ii) ensure the structure required to meet the goals is established and maintained;

(iii) establish objectives and measure their achievement; and

(iv) ensure continual improvement in the QMS.

4. Structure

(1) The accountable manager shall appoint an accountable QM to manage the system and who meets the experience and qualifications requirements specified in CAR 121.06.2(5).

(2) The QM must have direct link to the accountable manager to discuss QMS matters when required.

(3) The roles and responsibilities of the QM and all other role players within the QMS must be defined in writing (normally job descriptions or delegation documents).

(4) QA responsibilities must be independent from all other line functions within the organisation.

(5) The structure of the organisation varies with the size and complexity of the company but in all cases, should be developed so as to properly interface with other operator departments or divisions and with external agencies with which the company is involved. Each operator will have at least an operations and a maintenance department with which the QA personnel will be required to interface.

5. Process requirements

(1) Processes are the means by which the QA goals are meant to be attained and must be documented, whether written as procedures or mapped in flow chart format, for every activity and task within the organisation (this depends upon the scope of the QMS but is normally company-wide).

(2) Depending on the complexity of the system, there could also be a distinction between high level processes, which are generic in nature, and the detailed processes needed to achieve the QA goals.

(3) The inputs, sequential steps and outputs must be shown, as well as the people responsible for these.

(4) Processes must list -

(a) the references that must be consulted in using the process;

(b) the records that must be completed as evidence of the process having been followed; and

(c) the minimum retention periods for these documents as specified in the document and records control procedures.

(5) Processes normally fall into the following categories of which quality control must be part and in which segregation of duties is a critical principle -

(a) key/core business processes critical to the company's reason for existence. In an airline it would typically be flight operations, ground operations, maintenance, safety management, etc.;

(b) support processes that are developed in support of the core processes, e.g. recruitment, procurement, etc.; and

(c) quality processes, like auditing, management review of the system, document control, records control, measurement of objectives, measurement of the ability of processes to achieve their intended results, customer satisfaction measurement, data analysis corrective action and preventive action.

6. Documentation

(1) Except as provided in paragraph (3), the QMS must be supported by a quality management manual (QMM), the contents of which shall include -

(a) the system of amendment and revision -

(i) the procedure for amending the manual, including temporary revisions;

(ii) who is responsible for the issuance and insertion of amendments and revisions;

(iii) a record of amendments and revisions with insertion dates and effective dates;

(iv) a description of the system for the annotation of pages and their effective dates;

(v) a list of effective pages; and

(vi) a description of the distribution system for the manual, amendments and revisions;

(b) the company's policy statement;

(c) the company's structure;

(d) the company's objectives;

(e) the roles, duties and responsibilities of the company's key personnel, including the accountable manager and QM. Where there is more than one QM, the mandate and specific functions of each and the interrelationship between them must be clearly identified; and

(f) the procedures/processes whether written or mapped (some companies include only high level cross-departmental processes in the QMM and others include all processes in their QMM - they would end up with a series of manuals). Detailed manuals are normally the responsibility of the line managers but they still form part of the QMS and will fit into the QMS to meet requirements.

(2) In addition, the following documentation, usually residing in the QMM, shall be prepared and used within the QMS -

(a) forms and checklists that have to be used in the execution of the processes;

(b) a list of records used in the system;

(c) a list of forms used in the system;

(d) a list of registers or software systems in use as support to the system; and

(e) a list of external documents that impact on the system (called references).

(3) The information required by paragraph (1) may be included in the company's safety management manual (SMM) or operations manual if the company's size and complexity are such that a separate manual is not required.

7. Quality Manager

(1) In the case of small/very small operators, the posts of the accountable manager and the QM may be combined. However, in such event, independent personnel should conduct the quality inspections/audits.

(2) The specific duties and responsibilities of the QM will vary in relation to the size and complexity of the company but shall be identified in the QMM or other manual, if a separate QMM is not produced.

8. Quality assurance programme

(1) A QMS shall include a quality assurance programme that includes all planned and systematic actions necessary to provide confidence that all operations and maintenance are conducted in accordance with all applicable requirements, standards and operational procedures. When establishing a quality assurance programme, consideration should, at least, be given to the following tools and considerations -

(a) Inspection

The primary purpose of a quality inspection is to observe a particular event/action/document, etc., in order to verify whether established operational procedures and requirements are followed during the accomplishment of that event and whether the required standard is achieved. Typical subject areas for quality inspections are -

(i) actual flight operations;

(ii) ground de-icing/anti-icing;

(iii) flight support services;

(iv) load control;

(v) maintenance;

(vi) technical standards; and

(vii) training standard;

(b) Audit

As identified in its definition, an audit is an in-depth review of all or several facets of the company's operations with the goal of identifying systemic faults in those operations. Factors to consider are-

(i) audits should include quality procedures and processes covering at least the following -

(aa) a statement explaining the scope of the audit;

(bb) planning and preparation;

(cc) gathering and recording evidence; and

(dd) analysis of the evidence; and

(ii) techniques which contribute to an effective audit are -

(aa) interviews or discussions with personnel;

(bb) a review of published documents;

(cc) the examination of an adequate sample of records;

(dd) the witnessing of the activities which make up the operation; and

(ee) the preservation of documents and the recording of observations;

(c) Auditors

The audit process is only as effective as the persons chosen to participate in the audit are. It follows that particular care must be exercised in selecting each auditor. Some considerations are -

(i) auditors should not have any day-to-day involvement in the area of the operation and/or maintenance activity which is to be audited. An operator may, in addition to using the services of full-time dedicated personnel belonging to a separate quality department, undertake the monitoring of specific areas or activities by the use of part-time auditors;

(ii) an operator whose structure and size does not justify the establishment of full-time auditors may undertake the audit function by the use of part-time personnel from within his or her own organisation or from an external source under the terms of an agreement acceptable to the Executive Director. In all cases, the operator should develop suitable procedures to ensure that persons directly responsible for the activities to be audited are not selected as part of the auditing team;

(iii) where external auditors are used, it is essential that any external specialist is familiar with the type of operation or maintenance conducted by the operator;

(iv) the operator's quality assurance programme should identify the persons within the company who have the experience, responsibility and authority to -

(aa) perform quality inspections and audits as part of on-going quality assurance;

(bb) identify and record any concerns or findings, and the evidence necessary to substantiate such concerns or findings;

(cc) initiate or recommend solutions to concerns or findings through designated reporting channels;

(dd) verify the implementation of solutions within specific timescales; and

(ee) report directly to the QM.

(d) Audit Scope

Operators are required to monitor compliance with the operational procedures they have designed to ensure safe operations, airworthy aircraft, and the serviceability of both operational and safety equipment. In so doing, they should as a minimum and where appropriate, monitor the following -

(i) the organisation;

(ii) plans and company objectives;

(iii) operational procedures;

(iv) flight safety;

(v) operator certification (AOC/Operations Specifications);

(vi) supervision within the organisation;

(vii) aircraft performance;

(viii) all-weather operations;

(ix) communications and navigational equipment and practices;

(x) mass, balance and aircraft loading;

(xi) instruments and safety equipment;

(xii) manuals, logs and records;

(xiii) aircraft maintenance/operations interface;

(xiv) use of the MEL;

(xv) maintenance programmes and continued airworthiness;

(xvi) airworthiness directives management;

(xvii) maintenance accomplishment;

(xviii) defect deferral;

(xix) flight crew;

(xx) cabin crew;

(xxi) operational control personnel;

(xxii) dangerous goods;

(xxiii) security;

(xxiv) training; and

(xxv) safety management system.

(e) Audit Scheduling

A quality assurance programme should include a defined audit schedule and a periodic review-cycle, area by area, with consideration being given to the following factors -

(i) the schedule should be flexible and allow unscheduled audits when trends are identified. An operator should establish a schedule of audits to be completed during a specified calendar period. All aspects of the operation shall be reviewed within every period of 12 months in accordance with the programme unless an extension to the audit period is accepted by the Executive Director;

(ii) an operator may increase the frequency of audits at his or her discretion but shall not decrease the frequency unless accepted by the Executive Director. It is considered unlikely that an interval between audits greater than 24 months would be acceptable;

(iii) follow-up audits should be scheduled when necessary to verify that corrective action was carried out and that it was effective; and

(iv) the operator's defined audit schedule can be affected by significant changes to the management, organisation, operation or technologies, as well as changes to the regulatory requirements, resulting in the requirement for an ad hoc audit.

(f) Monitoring

Monitoring entails keeping abreast of the activities within the company as a part of the QA programme but also to monitor the QA activities to ensure they are adequate (monitor the monitors). Factors to consider are -

(i) the aim of monitoring within the quality system is primarily to investigate and judge its effectiveness and thereby to ensure that defined policy and operational and maintenance standards are continuously complied with.

Monitoring activity is based upon quality inspections, audits, corrective action and follow-up; and

(ii) the operator should establish and publish a procedure to monitor regulatory compliance on a continuing basis. This monitoring activity should be aimed at eliminating the causes of unsatisfactory performance. Any non-compliance identified as a result of monitoring shall be communicated to the manager responsible for taking corrective action or, if appropriate, the accountable manager. Such non-compliance shall be recorded, for the purpose of further investigation, in order to determine the cause and to enable the recommendation of appropriate corrective action.

(g) Corrective Action

The quality assurance programme shall include procedures to ensure that corrective actions are taken in response to findings. These quality procedures should result in the monitoring of such actions to verify their effectiveness and having been completed. Organisational responsibility and accountability for the implementation of corrective action resides with the department cited in the report as identifying the finding. The accountable manager will have the ultimate responsibility for resourcing the corrective action and ensuring, through the quality manager, that the corrective action has re-established compliance with the standard required by the Executive Director and any additional requirements defined by the operator. The procedures and responsibilities associated with a corrective action programme are -

(i) subsequent to the quality inspection/audit, the operator shall establish -

(aa) the seriousness of any findings and any need for immediate corrective action;

(bb) the origin of the finding;

(cc) which corrective actions are required to ensure that the non-compliance does not recur;

(dd) a schedule for corrective action;

(ee) the identification of individuals or departments responsible for implementing corrective action; and

(ff) allocation of resources by the accountable manager, where appropriate; and

(ii) the QM shall -

(aa) verify that corrective action is taken by the manager responsible in response to any finding of non-compliance;

(bb) verify that corrective action includes the elements outlined in paragraph (1)(g)(i) above;

(cc) monitor the implementation and completion of corrective action;

(dd) provide management with an independent assessment of corrective action, implementation and completion; and

(ee) evaluate the effectiveness of corrective action through the follow-up process;

(h) Follow-up

Proper follow-up is a mandatory part of the QA process. It is the responsibility of the QM to ensure that each finding of non-compliance has been resolved satisfactorily and that the resultant solution is effectively implemented, such that a re-occurrence of the situation leading to the non-compliance is not or is highly unlikely to recur. Follow-up normally requires at least an inspection of the area identified as being non-compliant but may require a more in-depth audit to ensure a satisfactory resolution of the issue.

(i) Management Evaluation

A management evaluation is a comprehensive, systematic, documented review by the management of the quality system, operational policies and procedures and should consider the following -

(i) the results of quality inspections, audits and any other indicators;

(ii) the overall effectiveness of the management organisation in achieving stated objectives;

(iii) a management evaluation should identify and correct trends and prevent, where possible, future non-conformities. Conclusions and recommendations made as a result of an evaluation shall be submitted in writing to the responsible manager for action. The responsible manager should be an individual who has the authority to resolve issues and take action; and

(iv) the accountable manager should decide upon the frequency, format and structure of internal management evaluation activities;

(j) Recording

The operator shall maintain accurate, complete and readily accessible records documenting the results of the quality assurance programme. Records are essential data to enable an operator to analyse and determine the root causes of non-conformity, so that areas of non-compliance can be 6f at least five years-

(i) audit schedules;

(ii) quality inspection and audit reports;

(iii) responses to findings;

(iv) corrective-action reports;

(v) follow-up and closure reports; and

(vi) management evaluation reports.

(2) An operator may sub-contract out certain activities to external agencies for the provision of services. The quality assurance programme shall include an examination of a sub-contractor and considerations with respect to sub-contracting are -

(a) sub-contract may be issued as follows -

(i) ground de-icing/anti-icing;

(ii) maintenance;

(iii) ground handling;

(iv) flight support (including performance calculations, flight planning, navigation database and dispatch and flight following);

(v) training; and

(vi) manual preparation;

(b) an operator shall develop policies and procedures for third parties that perform work on its behalf;

(c) the ultimate responsibility for the product or service provided by a sub-contractor shall remain with an operator;

(d) a written agreement shall be entered into between an operator and a sub-contractor, clearly defining the safety-related services and quality to be provided;

(e) a sub-contractor's safety-related activities relevant to the agreement shall be included in an operator's quality assurance programme;

(f) an operator shall ensure that a sub-contractor has the necessary authorisation or approval when required, and commands the resources and competence to undertake the task; and

(g) if an operator requires a sub-contractor to conduct an activity that exceeds a sub-contractor's authorisation or approval, the operator is responsible for ensuring that the sub-contractor's quality assurance takes account of such additional requirements.

(3) Complex quality systems could be inappropriate for operators with fewer than 20 full-time persons on staff. Such operators should consider the following when establishing a QA programme -

(a) the effort required to draw up the manuals and quality procedures and implement the QMS required for a complex system may stretch the operator's resources. It is therefore accepted that such operators would tailor their quality systems to suit the size and complexity of their operation and allocate resources accordingly;

(b) it may be appropriate to develop a quality assurance programme that employs a checklist. The checklist should have a supporting schedule that requires completion of all checklist items within a specified timescale, together with a statement acknowledging completion of a periodic review by top management. An occasional independent review of the checklist content and achievement of the quality assurance should be undertaken; and

(c) the operator may decide to use internal or external auditors or a combination of the two. In these circumstances it would be acceptable for external specialists and/or qualified organisations to perform the quality audits on behalf of the quality manager. If the independent quality audit function is being conducted by external auditors, the audit schedule should be shown in the relevant documentation.

Note - *Whatever sub-contract arrangements are made, the operator retains the ultimate responsibility for the quality system, especially the completion and follow-up of corrective actions*.

(4) A QA programme shall include a training programme that provides the following -

(a) for those responsible for managing the quality system, receive training covering at least -

(i) an introduction to the concept of the quality system;

(ii) quality management;

(iii) the concept of quality assurance;

(iv) quality manuals;

(v) audit techniques;

(vi) reporting and recording; and

(vii) the way in which the quality system will function in the organisation;

(b) for those involved in the inspection or audit functions, training covering at least

(i) an introduction to the concept of the quality system;

(ii) the concept of quality assurance;

(iii) reporting and recording; and

(iv) audit techniques; and

(c) a briefing to the remainder of the employees consisting of background information about the QA programme and their role in maximising safety and efficiency in the organisation. The allocation of time and resources should be governed by the size and complexity of the operation concerned.