

# Advisory Circular

---

## GUIDANCE ON OPERATIONAL PROCEDURES FOR ANR-121 OPERATIONS

GENERAL .....	1
PURPOSE .....	1
APPLICABILITY .....	2
RELATED REGULATIONS .....	2
RELATED ADVISORY CIRCULARS .....	2
CANCELLATION .....	2
EFFECTIVE DATE .....	2
OTHER REFERENCES .....	2
GUIDANCE 121REG21 GUIDANCE FOR REGULATION 21 OF ANR-121 – USE OF OPERATIONS MANUAL .....	3
GUIDANCE 121REG22 GUIDANCE FOR REGULATION 22 OF ANR-121 – OPERATIONAL CONTROL .....	3
GUIDANCE 121REG27 GUIDANCE FOR REGULATION 27 OF ANR-121 – FLIGHT PLANNING .....	5
GUIDANCE 121REG28 GUIDANCE FOR REGULATION 28 OF ANR-121 – FLIGHT PREPARATION .....	6
GUIDANCE 121REG34 GUIDANCE FOR REGULATION 34 OF ANR-121 – OPERATING INTO AREAS WITH KNOWN OR FORECASTED VOLCANIC ASH CONTAMINATION .....	7
GUIDANCE 121REG35 GUIDANCE FOR REGULATION 35 OF ANR-121 – SAFETY RISK ASSESSMENT OF AERODROME RESCUE AND FIRE FIGHTING SERVICE .....	7
GUIDANCE 121REG39 GUIDANCE FOR REGULATION 39 OF ANR-121 – NOISE ABATEMENT PROCEDURES .....	7
GUIDANCE 121REG40 GUIDANCE FOR REGULATION 40 OF ANR-121 – ALTERNATE AERODROMES – GENERAL REQUIREMENTS .....	7
GUIDANCE 121REG43 GUIDANCE FOR REGULATION 43 OF ANR-121 – DESTINATION ALTERNATE .....	8
GUIDANCE 121REG45 GUIDANCE FOR REGULATION 45 OF ANR-121 – FUEL REQUIREMENTS .....	8
GUIDANCE 121REG47 GUIDANCE FOR REGULATION 47 OF ANR-121 – IN-FLIGHT FUEL MANAGEMENT .....	9
GUIDANCE 121REG48 GUIDANCE FOR REGULATION 48 OF ANR-121 – CHECKLISTS FOR FLIGHT CREW .....	10
GUIDANCE 121REG51 GUIDANCE FOR REGULATIONS 51 AND 52 OF ANR-121 – AIRCRAFT TRACKING .....	11

### GENERAL

Advisory Circulars (ACs) are issued by the Director-General of Civil Aviation (DGCA) from time to time to provide practical guidance or certainty in respect of the statutory requirements for aviation safety. ACs contain information about standards, practices and procedures acceptable to CAAS. An AC may be used, in accordance with section 3C of the Air Navigation Act (Cap. 6) (ANA), to demonstrate compliance with a statutory requirement. The revision number of the AC is indicated in parenthesis in the suffix of the AC number.

### PURPOSE

This AC provides guidance to demonstrate compliance with, and information related to, requirements regarding operational procedures for operations conducted under Air Navigation (121 – Commercial Air Transport by Large Aeroplanes) Regulations (ANR-121).

**APPLICABILITY**

This AC is applicable for the AOC holder operating in accordance with ANR-121.

**RELATED REGULATIONS**

This AC relates specifically to Division 2 in Part 2 of ANR-121.

**RELATED ADVISORY CIRCULARS**

- AC 121-2-2 Approach and Landing Accident and Reduction Measures
- AC 121-2-3 Standard Operating Procedures for Flight Crew Members
- AC 121-2-4 Flight Crew Procedures and Training During Taxi Operations
- AC 121-2-5 Preventing Injuries caused by Turbulence
- AC 121-2-6 Mode Awareness and Energy State Management aspects of Flight Deck automation
- AC 121-2-7 Management of Lithium Batteries in the Aircraft Passenger cabin
- AC 121-2-8 Level of Rescue and Fire Fighting Service Available
- AC 121-2-9 Procedure for Cabin Crew
- AC 121-2-10 Aircraft Tracking

**CANCELLATION**

This is the first AC issued on the subject.

**EFFECTIVE DATE**

This AC is effective from 1 October 2018.

**OTHER REFERENCES**

Nil.

**GUIDANCE 121REG21      GUIDANCE FOR REGULATION 21 OF ANR-121 – USE OF OPERATIONS MANUAL**

- 1 Regulation 21 of ANR-121 requires that the AOC holder's operations be conducted in accordance with procedures specified in an approved Operations Manual.
- 2 The AOC holder may refer to the following ACs for guidance on the development of procedures:
  - AC 121-2-2 Approach and Landing Accident and Reduction Measures
  - AC 121-2-3 Standard Operating Procedures for Flight Crew Members
  - AC 121-2-4 Flight Crew Procedures and Training During Taxi Operations
  - AC 121-2-5 Preventing Injuries caused by Turbulence
  - AC 121-2-6 Mode Awareness and Energy State Management aspects of Flight Deck Automation
  - AC 121-2-7 Management of Lithium Batteries in the Aircraft Passenger cabin
  - AC 121-2-9 Procedure or Cabin Crew

**GUIDANCE 121REG22      GUIDANCE FOR REGULATION 22 OF ANR-121– OPERATIONAL CONTROL**

- 1 OPERATIONAL CONTROL FUNCTIONS
  - 1.1 The AOC holder exercises operational control by making those decisions and performing those actions on a daily basis that are necessary to operate flights safely and in compliance with the regulations. Operational control functions include crew and aircraft scheduling, accepting charter flights from the public, reviewing weather and notices to airmen (NOTAM), and flight planning. Another aspect consists of developing and publishing flight control policies and procedures for flight crews and other operations personal to follow in the performance of their duties.
  - 1.2 The AOC holder is responsible for collecting and disseminating information that is needed to plan and conduct flights safely, including information about en-route and terminal weather conditions, navigation, and aerodrome facilities.
- 2 OPERATIONAL CONTROL SYSTEMS
  - 2.1 Operational control systems vary with the scope of operation the AOC holder is authorised to conduct, the complexity of the operations, the means of communication, and with the persons who are involved in preparing for and conducting flights under the AOC holder's system.
- 3 AOC HOLDER OVERSIGHT RESPONSIBILITY
  - 3.1 The AOC holder's safety and quality assurance responsibility includes ensuring that both its flight crew and operational control employees comply with published policies and procedures.

#### 4 AOC HOLDER'S OPERATIONS MANUAL

- 4.1 As required in Regulation 21 of ANR-121, the AOC holder is to prepare and keep current a manual for the guidance of flight, ground and management personnel in the performance of their duties and responsibilities. The AOC holder must prepare in its Operations Manual, the duties and responsibilities of those persons to whom authority to exercise operational control has been delegated, providing the name of each manager responsible for flight operations (operational control) including a description of their duties and functions.
- 4.2 The AOC holder's Operations Manual must contain guidance on the conditions that must be met before a flight may be initiated or continues, or under which a flight must be diverted or terminated.

#### 5 SPECIFIC OPERATIONAL FUNCTIONS

- 5.1 Operational control includes, but is not limited to, the AOC holder's performance of the following functions:
- (a) Ensuring that only those authorised by the AOC are conducted.
  - (b) Ensuring that only crewmembers trained and qualified in accordance with the applicable regulations are assigned to conduct a flight.
  - (c) Ensuring that crewmembers are in compliance with flight and duty time requirement when departing on a flight.
  - (d) Designating a pilot-in-command (PIC) for each flight.
  - (e) Providing the PIC and other personnel who perform operational control functions with access to the necessary information for the safe conduct of the flight (such as weather, NOTAMs, volcanic ash, conflict zone and aerodrome analysis).
  - (f) Specifying the conditions under which a flight may be released (weather minima, flight planning, and airworthiness of aircraft, aircraft loading, and fuel requirements).
  - (g) Ensuring that each flight has complied with the conditions specified for release before it is allowed to depart.
  - (h) Ensuring that when the conditions specified for the flight's release cannot be met, the flight is either cancelled, delayed, re-routed or diverted.
  - (i) Monitoring the progress of each flight and initiating timely actions when the flight cannot be completed as planned, including diverting or terminating a flight.

## 6 SPECIFIC OPERATIONAL CONTROL SYSTEMS

- 6.1 The AOC holder must include, in the Operations Manual, policies and procedures appropriate to the flight release system used.

Note: The AOC holder's system for exercising operational control may be described in the AOC holder's SOPs.

## 7 OPERATIONAL STRUCTURE

- 7.1 An operational control function may be centralised in one individual or diversified throughout an AOC holder's organization. In practice, it is not feasible for an individual to exercise operational control without assistance in any but the simplest of flight operations. Most AOC holders create specialised departments for crew scheduling, load control, and other functions. These functions may or may not be placed under the management and supervision of the "flight control" department. When these functions are delegated to specialized sections of the AOC holder's organisation, the AOC holder is responsible for the following:

- (a) Establishing a means to ensure that all functions have been accomplished before a flight can be authorised to depart;
- (b) Establish effective internal communications, operating procedures, and administrative controls to meet this obligation.
- (c) Ensuring that these procedures are published in the AOC holder's operations manual.
- (d) Ensuring that all sub-contracted activities are carried out in adherence with its policies and procedures and that its sub-contractors provide timely notification to the AOC holder of any irregularities that will affect the safety and operational statuses of an aircraft or a flight.

## **GUIDANCE 121REG27      GUIDANCE FOR REGULATION 27 OF ANR-121 – FLIGHT PLANNING**

- 1 The flight brief provided by the AOC holder to the PIC on routes not normally flown should include guidance on the schedule to be maintained and on all operational aspects of the voyage not fully covered in the operations manual - including in particular details of the routes to be flown, specific aerodrome operating minima for all aerodromes (including alternates) likely to be used, and details of the navigation and terrain clearance procedures to be used.

**GUIDANCE 121REG28****GUIDANCE FOR REGULATION 28 OF ANR-121 – FLIGHT PREPARATION**

- 1 The pre-flight inspection may be completed by the flight crew, or maintenance personnel where available. Details of this procedure must be included in the Operations Manual.
- 2 As required in Regulation 28 of ANR-121, the pilot-in-command must be advised on details about the airworthiness of the aircraft. Information such as the below should preferably be via the technical log:
  - (a) when the next Scheduled Maintenance Inspection (SMI) is due, by flying hours and calendar time;
  - (b) any defects existing on the aircraft affecting its operational airworthiness and safety; and
  - (c) any maintenance actions due before the next SMI.
- 3 When a procedure acceptable to the CAAS exists for the control of maintenance actions necessary between Scheduled Maintenance Inspections, it may not be practicable to include full details in the Technical Log. In such cases, it should be possible for the flight crew to verify, with assistance of maintenance personnel if necessary, that no maintenance task is due or will become due before the end of the intended flight.
- 4 The AOC holder should provide any other information to the crew concerning the aircraft and its systems, including changes resulting from modifications, which may affect the operation of the aircraft.
- 5 The AOC holder should have management and quality assurance procedures which will ensure that whether the aircraft is dispatched by the AOC holder or the task is wholly or partly sub-contracted:
  - (a) Fuel uplifted prior to flight is free from contamination.
  - (b) Refueling of the aircraft is carried out in a controlled manner taking into account essential safety measures for fire prevention.
  - (c) Baggage and cargo are loaded and restrained in accordance with Flight Manual limitations and that cargo doors are securely fastened.
  - (d) Push-back and start-up are carried out to a standard procedure for the specific type of aircraft, under the control of a suitably trained person, that the area in which engines will be started is free from debris and contamination likely to damage the engines and that fire-fighting facilities are immediately available.
  - (e) Control surface and landing gear locks, restraint devices and blanks are removed.
  - (f) Proper attention is given to the rectification of recorded defects, compliance with the MEL and any limitations imposed in respect of the period of flights, flying hours or calendar time.
  - (g) The aircraft is serviced and inspected as required by the approved maintenance programme.

**GUIDANCE 121REG34      GUIDANCE FOR REGULATION 34 OF ANR-121 – OPERATING INTO AREAS WITH KNOWN OR FORECASTED VOLCANIC ASH CONTAMINATION**

- 1      Procedures recommended for use by pilots whose aircraft have inadvertently encountered a volcanic ash cloud and for post-flight reporting can be found in ICAO Doc 9691 – *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds*.
- 2      Guidance on the risk management of flight operations in known or forecast volcanic ash contamination can be found in ICAO Doc 9974 – *Flight Safety and Volcanic Ash*.

**GUIDANCE 121REG35      GUIDANCE FOR REGULATION 35 OF ANR-121 – SAFETY RISK ASSESSMENT OF AERODROME RESCUE AND FIRE FIGHTING SERVICE**

- 1      The AOC holder is to refer to AC 121-2-8 for guidance in fulfilling this requirement.

**GUIDANCE 121REG39      GUIDANCE FOR REGULATION 39 OF ANR-121 – NOISE ABATEMENT PROCEDURES**

- 1      Noise abatement regulations frequently require special handling techniques and routings after take-off. The flight manuals of the more recently certificated aeroplanes contain performance data related to noise abatement procedures. Details of the procedures for each airfield or runway used by the AOC holder, for which noise abatement regulations exist, must be provided in the operations manual. Instructions to ignore noise abatement procedures in emergency situations must also be included.
- 2      Where, in exceptional circumstances, it may be appropriate in the course of noise abatement procedures to start a turn at less than 500 ft agl, pilots should be given suitable instructions about restricting the angle of bank. Pilots should also be instructed not to reduce thrust below 500 ft agl. Above 500 ft agl, thrust should be reduced in accordance with the aircraft manufacturer's instructions. In the absence of such guidance, thrust should not be reduced to an extent that would result in a gross gradient of climb of less than 4%.

**GUIDANCE 121REG40      GUIDANCE FOR REGULATION 40 OF ANR-121 – ALTERNATE AERODROMES – GENERAL REQUIREMENTS**

- 1      The AOC holder may refer to the Flight Planning and Fuel Management Manual (ICAO Doc 9976) for guidance on:
  - (a)      the selection of incremental values regarding for height of cloud base and visibility to be added to the AOC holder's established aerodrome operating minima, as referred to in Regulation 40(2)(a) of ANR-121; and
  - (b)      establishing an appropriate margin of time for the estimated time of use of an aerodrome (i.e. a period before and after the ETA), as referred to in Regulation 40(2)(b) of ANR-121.
- 2      The AOC holder may refer to the following for guidance on performing a safety risk assessment and on determining variations to alternate aerodrome selection criteria:
  - (a)      Flight Planning and Fuel Management Manual (ICAO Doc 9976);
  - (b)      Safety Management Manual (ICAO Doc 9859)

**GUIDANCE 121REG43      GUIDANCE FOR REGULATION 43 OF ANR-121 –  
DESTINATION ALTERNATE**

- 1      The “separate runways” referred to in Regulation 43(2)(a)(ii) of ANR-121 are two or more runways at the same aerodrome configured such that if one runway is closed, operations to the other runway(s) are operational.
- 2      The AOC holder may refer to the Flight Planning and Fuel Management Manual (Doc 9976) for guidance on planning operations to isolated aerodromes.

**GUIDANCE 121REG45      GUIDANCE FOR REGULATION 45 OF ANR-121 – FUEL  
REQUIREMENTS**

- 1      When planning for fuel, the AOC holder must consider and make allowance for, as appropriate –
  - (a)      operation of the auxiliary power unit;
  - (b)      operation of systems such as de-icing which increase fuel consumption;
  - (c)      congested air traffic area/s where delays are likely;
  - (d)      airfields where there is a need to climb to or descend from the en-route safety altitude whilst in the vicinity of the airfield;
  - (e)      inaccuracy of the aircraft fuel gauges as applicable
- 2      The “unforeseen factors” referred to in Regulation 45(3)(c) of ANR-121 are those which could have an influence on the fuel consumption to the destination aerodrome, such as deviations of an individual aeroplane from the expected fuel consumption data, deviations from forecast meteorological conditions, extended delays, and deviations from planned routings and/or cruising levels.
- 3      The AOC holder should consider setting one final reserve fuel value for each aeroplane type or variant in his fleet rounded up to an easily recalled figure.
- 4      The AOC holder should refer to the Flight Planning and Fuel Management Manual (ICAO Doc 9976) for guidance on the specific safety risk assessment, fuel consumption monitoring programmes and the advanced use of alternate aerodromes for a variation that CAAS may approve under Regulation 45(8) of ANR-121. The AOC holder may propose for CAAS’s approval:
  - (a)      A minimum contingency fuel and minimum destination alternate fuel to cater for very short sectors or for destination alternate aerodromes which are close to the destination aerodrome;
  - (b)      A cap for the contingency fuel for long haul operations.
- 5      For the purpose of Regulation 45(10) of ANR-121, the AOC holder may also refer to the Flight Planning and Fuel Management Manual (ICAO Doc 9976) for guidance on procedures for in-flight fuel management including re-planning adjustment or re-planning considerations when a flight begins to consume contingency fuel before take-off.



- 1 Regulation 47 of ANR-121 requires that the AOC holder establishes, and incorporates in the operations manual, policies and procedures for proper in-flight fuel management.
- 2 Besides instructions to ensure compliance with the regulations, the procedures should cover matters such as:
  - (a) The notification to the pilot-in-command when any abnormal fuel procedure is used, and that at least two flight crew members should monitor that operation;
  - (b) The continuation of a flight to a destination when normal reserve fuel is no longer available, and the associated safeguards which may include:
    - (i) The decision to continue to only be made when one hour or less from the destination and when close to a usable en-route alternate;
    - (ii) The usable fuel remaining to be sufficient to fly to the destination aerodrome with at least the final fuel reserve (as specified in Regulation 45(3)(f) of ANR-121) upon landing;
    - (iii) The actual and forecast meteorological conditions at the destination to allow a visual approach to landing until one hour after the estimated time of arrival (ETA), and that any significant crosswind on the runway be considered;
    - (iv) There are no known or probable air traffic control delays for the period from ETA to ETA plus one hour; and
    - (v) There are at least two independent runways available and suitable for landing.
  - (c) the proper phraseology, as specified in Regulation 39 of ANR-91, to be used by its pilots with ATC regarding fuel status of the aircraft.

Notes:

  - (i) The declaration of “MINIMUM FUEL” informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landing and any change to the existing clearance may result in landing with less than planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.
  - (ii) The words “MAYDAY FUEL” describe the nature of the distress conditions as required in Volume II, 5.3.2.1, b) 3. of Annex 10 to the Chicago Convention.
- 3 The AOC holder may refer to the Flight Planning and Fuel Management Manual (ICAO Doc 9976) for further guidance on procedures for in-flight fuel management. It should be noted that the protection of final reserve fuel is intended to ensure a safe landing at any aerodrome when unforeseen occurrences may not permit safe completion of an operation as originally planned.

**GUIDANCE 121REG48      GUIDANCE FOR REGULATION 48 OF ANR-121 –  
CHECKLISTS FOR FLIGHT CREW**

- 1      The AOC holder must establish the use of checklists as an integral part of the organisation's standard operating procedures (SOPs). Flight crew must be instructed on the use of these checklists.
  
- 2      The drills and checks to be followed in the operation of the aircraft, including those for non-normal or emergency conditions, must be listed in full in the operations manual – preferably in a separate volume. Emergency equipment checklists and instructions on their use must also be provided. The pilot-in-command should ensure that the checklists are complied with. The design of the checklists should observe human factor principles.
  
- 3      There should be items in the normal drill requiring the pilot-in-command to brief other flight crew members on the following matters:
  - (a)      Prior to take-off:
    - (i)      The actions to be taken in the event of an emergency arising during or immediately after take-off;
    - (ii)      Any special requirements for take-off in crosswinds and on wet or otherwise contaminated runways;
    - (iii)      Noise abatement procedures;
    - (iv)      Selection of radio aids.
  
  - (b)      Prior to landing:
    - (i)      Selection of radio aids;
    - (ii)      Missed approach procedure;
    - (iii)      Any special handling or systems requirements for landing;
    - (iv)      Selected alternate for diversion.

Note: It is not suggested that these items should be included in checklists in detail; if suitable instructions are provided elsewhere, the word 'briefing' will be sufficient at the appropriate points in the lists.
  
- 4      Checklists will not be acceptable unless they include detailed requirements for the setting and cross checking of altimeters for all phases of flight. There should also be an item in the normal drills requiring minimum safe altitudes to be checked before descending from cruising level.
  
- 5      Examples of emergency drills to be covered in checklists are:
  - (a)      Engine failure;
  - (b)      Engine fire and severe engine damage;
  - (c)      Propeller malfunction;
  - (d)      Failure of normal feathering system;
  - (e)      Fuel filter icing;
  - (f)      Relighting of turbine engines;
  - (g)      Bus-bar and other serious electrical failures;
  - (h)      Malfunction of power control systems;
  - (i)      Pressurisation failure and emergency descent;
  - (j)      Cabin/hold fire;
  - (k)      Smoke removal;
  - (l)      Essential actions prior to commencement of emergency evacuation;
  - (m)      Hydraulic failures;
  - (n)      Brake overheat.

- 6 In aircraft operated by two pilots, checklists should be stowed in an appropriate manner so that they are available to both pilots. If this is not possible, separate drill cards or checklists should be provided for each pilot for use on the flight deck. If the flight crew includes a flight engineer or third pilot, a separate checklist should be provided for his/her use. In “single pilot” aircraft, checklists should be supplemented by the placarding of vital actions for final approach and landing. Emergency drills should be clearly marked for immediate use and, on larger and more complex aircraft; they should preferably be given on a separate set of cards kept apart from other documents on the flight deck and immediately available. For cabin crew, details of their ditching, crash landing and emergency evacuation drills should be readily available in flight. This can be achieved either by issue to each member of the cabin crew of a copy of their emergency drills – which they should be required to carry with them – or by stowing the drills cards at appropriate positions in the cabin. All checklists or drill cards must be of a quality sufficient to withstand heavy wear and to remain in legible condition.
- 7 On multi-crew aircraft, the manual should contain clear instructions that checklists are always to be used.
- 8 Aeroplane Bomb Search Procedure Checklist
- 8.1 In accordance with Regulation 7 of ANR-121, the AOC holder is to ensure that all aeroplanes carry a checklist of the procedures to be followed for that aeroplane type in searching for concealed weapons, explosives, or other dangerous devices when a well-founded suspicion exists that the aeroplane may be the object of an act of unlawful interference. The AOC holder should also support the checklist with guidance on the appropriate course of action to be taken should a bomb or suspicious object be found, and provide information on the least-risk bomb location specific to that aeroplane type.

**GUIDANCE 121REG51      GUIDANCE FOR REGULATIONS 51 AND 52 OF ANR-121 –  
AIRCRAFT TRACKING**

- 1 The AOC holder may refer to AC 121-2-9 for guidance on developing procedures relating to aircraft tracking.