

Advisory Circular

GUIDANCE ON AIR OPERATOR CERTIFICATE CERTIFICATION REQUIREMENTS

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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 the certification of an operator for commercial air transport operations.

APPLICABILITY

This AC is applicable for the operator seeking or holding an Air Operator Certificate under the Air Navigation (119 – Air Operator Certification) Regulations (ANR-119).

RELATED REGULATIONS

This AC relates specifically to Division 2 in Part 2 of ANR-119.

RELATED ADVISORY CIRCULARS

- AC 1-3 Safety Management System
- AC 1-4 Suspected Unapproved Parts
- AC 91-2-2 Reporting and Investigation of Reportable Safety Matters
- AC 119-1-1 Guidance on the Application for a Singapore Air Operator Certificate
- AC 119-2-2 Safety Management System - Safety Performance Indicators for an AOC Holder
- AC 119-2-3 Implementation of Flight Data Analysis Programme
- AC 119-2-4 Implementation of an AOC Holder's SMS

CANCELLATION

Revision 1 of this AC superseded Revision 0. Revision 1 updates Guidance 119Reg16.

EFFECTIVE DATE

This AC is effective from 26 November 2021.

OTHER REFERENCES

- ICAO Annex 6 Operation of Aircraft
- ICAO Doc 8335 Manual of Procedures for Operations Inspection, Certification and Continued Surveillance
- ICAO Doc 9376 Preparation of an Operations Manual
- ICAO Doc 9859 Safety Management Manual

GUIDANCE 119REG12 GUIDANCE FOR REGULATION 12 OF ANR-119 – PERSONNEL REQUIREMENTS

- 1 A sound and effective management structure is essential for ensuring safe operations. It is of particular importance that the operational management personnel has appropriate experience and is accorded proper status in the organisation.
- 2 The AOC holder's Chief Executive Officer or equivalent is expected to be the accountable manager. As required in Regulation 12 of ANR-119, the AOC holder must nominate for the acceptance of the CAAS the key personnel including, but not limited to the following:
 - (a) Flight operations, including the nomination of "Chief Pilot(s)";
 - (b) Crew training management and competency assessment;
 - (c) Continuing airworthiness management, including engineering aspects;
 - (d) Safety Management (covering the scope of SMS as described in Regulation 16 of ANR-119);
 - (e) Quality system (as described in Regulation 19 of ANR-119); and
 - (f) Ground operations.
- 3 The intent of Regulation 12(5) of ANR-119 is to provide for segregation of duties and to mitigate the possibility of conflict of interests among the appointment holders. In this regard, CAAS will take into consideration the size and expected scope of the AOC holder's organisation as well as the management structure of the AOC holder.
- 4 The persons nominated to hold appointments required in Regulation 12(5) of ANR-119 should be conversant with Singapore's aviation regulations, Annexes to the Chicago Convention, and have adequate qualifications and experience for the duties concerned.
- 5 For the purpose of Regulation 12(7) of ANR-119, the AOC holder should nominate appointment holders who satisfy the competencies specified in **Appendix A** to this AC, as applicable, for the various operations.
- 6 In addition, the AOC holder should nominate, for CAAS's acceptance, the person(s) who will be responsible to authorise appropriate qualified persons as signatories to various certification documents. The nomination should be supported by relevant qualification.
- 7 Point-of-contact
 - (a) The AOC holder should authorise one effective "point-of-contact" with CAAS for compliance monitoring. This "point-of-contact" is to effectively represent the AOC holder and communicate with CAAS. The point-of-contact should therefore be of appropriate seniority within the organisation and possess appropriate qualifications.
 - (b) If the AOC holder, due to the scale and complexity of his operations, has separate compliance monitoring for various areas, such as flight operations and continuing airworthiness management, he should correspondingly nominate additional point(s)-of-contact to focus on the different areas. These specific point(s)-of-contacts would, typically be appropriate for certain areas, where they might be performing some quality functions separately (see GUIDANCE 119REG19).

GUIDANCE 119REG14 GUIDANCE FOR REGULATION 14 OF ANR-119 – RESOURCE REQUIREMENTS

1 PERSONNEL

- 1.1 CAAS would take into account considerations such as the following when assessing the adequacy of the AOC holder's personnel resources:
- (a) Availability of qualified personnel to support the operations in relation to the aircraft type, route pattern, operational frequency and operational arrangements;
 - (b) Training conducted in accordance with the approved syllabi, including recurrent training as well as competency examinations; and
 - (c) Supervision of the personnel which includes the experience and knowledge of the supervisory staff, and the effectiveness of management systems such as quality management.

2 FACILITIES

- 2.1 The nature and scale of office services required – administrative staff and office equipment etc. should be related to the numbers of executive and other staff employed. Office services, such as printing facilities, should be sufficient for operational instructions and information to be produced and circulated to all concerned without delay.

3 ACCOMMODATION

- 3.1 Office space at each operating base/line station should provide a suitable working environment for the operating staff employed. Adequate provision must be made for the staff, for operational planning, for the storage and display of essential records, and for flight planning by flight crew.
- 3.2 Reasonable accommodation should be made available for aircraft crew to use before and between flights.

4 OPERATIONS LIBRARY

- 4.1 At each operating base/line station the AOC holder should maintain an adequate and appropriate library containing information that the AOC holder consider relevant for the safe conduct of its operations. Some examples include maps, charts, flight guides, operations manuals and other documents needed for reference and planning purposes, and for carriage in flight. The library should be kept in an orderly fashion and responsibility for its maintenance clearly defined.
- 4.2 Maps, charts, and flight guides held should cover the whole of the region for which the AOC holder is, or wishes to be, certificated.
- 4.3 Arrangements should be made for the amendment of manuals, flight guides etc, and for bringing the amendments to the notice of aircraft crews and other operating staff concerned. A record should be kept of the distribution of manuals and amendments.
- 4.4 All flight crew, and other operating staff who may be concerned, should have access at their normal operating base to:

- (a) Singapore AIP;
- (b) The regulations currently in force and any amendments thereto;
- (c) NOTAM; in particular affecting facilities over the routes, destination, en-route alternates and diversion;
- (d) Aeronautical Information Circulars; and
- (e) Flight rules of the State of the Aerodrome and the requirement to comply with these rules.

5 AIRCRAFT LIBRARY AND NAVIGATION BAG

- 5.1 The AOC holder should provide each aircraft with an adequate and updated library of manuals, maps and charts, flight guides checklists and other necessary documents, including data in electronic form, supported by an efficient amendment service. Content lists should be provided for making up the aircraft library and navigation bag, and aircraft drill cards should include an item requiring libraries and navigation bags to be checked before departure. Subject to approval by the CAAS (under Air Navigation (98 – Special Operations) Regulations), the AOC holder may opt for the use of approved electronic flights bags.

6 FLIGHT STAFF INSTRUCTIONS

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

GUIDANCE 119REG16 GUIDANCE FOR REGULATION 16 OF ANR-119 – SAFETY MANAGEMENT SYSTEM

1 REQUIREMENT FOR CAAS'S ACCEPTANCE OF THE SMS

- 1.1 As required in Regulation 16(3) of ANR-119, the AOC holder must obtain CAAS's acceptance of its SMS. The acceptance is contingent on two elements, the first being the initial acceptance of the SMS, which is conducted as part of the AOC certification process (refer to AC 119-1-1). The second element pertains to CAAS's continued acceptance of the AOC holder's SMS and requires the AOC holder to maintain the acceptability of its SMS through continuous improvements to ensure the effectiveness and performance of its SMS.

2 INITIAL ACCEPTANCE OF THE SMS

- 2.1 The SMS that is implemented should be scaled to the AOC holder's size and complexity of its operations. AC 119-2-4 provides examples on scaling an SMS

implementation. The Safety Manager may seek further guidance and support from CAAS where necessary.

- 2.2 For the initial acceptance, the applicant should submit its SMS implementation plan and SMS Manual for CAAS's acceptance. The manual should consist of policies and procedures for addressing each of the SMS elements. Procedures must be sufficiently detailed that enable CAAS to make its assessment on their suitability and ability in achieving the expectations of the SMS elements. The implementation plan should have milestones of achievements and details on the phasing-in of the implementation prior to and after the AOC certification.
- 2.3 The applicant is required to demonstrate the operations and functionalities of the procedures and programmes during phase 4 of the certification process as specified in AC 119-1-1. CAAS may, upon receiving and assessing the necessary documents and information and evaluating the results of the applicant's demonstration, provide an initial acceptance of the applicant's SMS during phase 5 of the certification process.

3 CONTINUED ACCEPTABILITY OF THE SMS

- 3.1 The AOC holder's SMS is assessed by CAAS periodically on its acceptability and effectiveness. Through these assessments, CAAS will identify and recommend areas for the improvement. Its progress towards maturity is monitored.
- 3.2 The hazard identification and risk management should be comprehensive with hazards relating to the AOC aviation activities identified from all sources, including those hazards and sources external to the AOC holder.
- 3.3 The AOC holder should use safety data in its decision-making process. Its safety data collection and processing system should continuously receive safety data and generate safety information which include its operational trends and systematically identify safety risks and emerging issues. This will ensure that the decisions made are based on safety data.
- 3.4 The AOC holder should have safety performance indicators (SPIs) for monitoring its safety performance. These SPIs must be related to its safety objectives and representative of the AOC holder's risks. Targets should be set on these SPIs where appropriate. The AOC holder may refer to AC 119-2-2 for guidance.

GUIDANCE 119REG17

GUIDANCE FOR REGULATION 17 OF ANR-119 – FLIGHT

DATA ANALYSIS

- 1 The AOC holder may refer to AC 119-2-3 for the development and implementation of a flight data analysis programme.

GUIDANCE 119REG18 GUIDANCE FOR REGULATION 18 OF ANR-119 – FLIGHT SAFETY DOCUMENTS SYSTEM

1 The purpose of a Flight Safety Documents System (FSDS) is to ensure consistency in the documentation and application across various departments, and therefore an integrated approach to its development is emphasised. The scope of a FSDS includes any documentation or manuals that pertain to the safe conduct of operations, such as the Operations Manual and Maintenance Control Manual.

2 ORGANISATION OF FSDS

2.1 A FSDS should be organised according to criteria which are essential to provide easy access to information required for flight and ground operations contained in the various operational documents comprising the system, as well as to manage the distribution and revision of operational documents.

2.2 Information contained in a FSDS should be grouped according to the importance and use of the information, as follows:

- (a) time critical information e.g. information that can jeopardise the safety of the operation if not immediately available e.g. Flight Staff Instructions, Internal Notice To Airman (INTAM).
- (b) time sensitive information e.g. information that can affect the level of safety or delay the operation if not available in a short time period.
- (c) frequently used information e.g. Operations Manual, Operator's Policies, QRH etc.
- (d) reference information, e.g. information that is required for the operation but does not fall under (b) or (c) above; and
- (e) information that can be grouped based on the phase of operation in which it is used.

2.3 Time critical information should be placed early and prominently in the FSDS.

2.4 Time critical information, time sensitive information, and frequently used information should be placed in cards and quick-reference guides.

3 VALIDATION

3.1 The FSDS should be validated before deployment, under realistic conditions. Validation should involve the critical aspects of the information use, in order to verify its effectiveness. Interaction among all groups that can occur during operations should be also be included in the validation process.

4 DESIGN

4.1 A FSDS should maintain consistency in terminology, and in the use of standard terms for common items and actions.

4.2 Operational documents should include a glossary of terms, acronyms and their standard definition updated on a regular basis to ensure access to the most recent terminology. All significant terms, acronyms and abbreviation included in the FSDS should be defined.

4.3 A FSDS should ensure standardisation across documents types, including writing style, terminology use of graphics and symbols, and formatting across documents. This includes consistent location-specific types of information, consistent use of units of measurement and consistent use of codes.

4.4 A FSDS should include a master index to locate, in a timely manner, information included in more than one operational document.

Note: The master index should be placed in the front of each document and consist of no more than three levels of indexing. Pages containing abnormal and emergency information should be tabbed for direct access.

4.5 A FSDS could comply with the requirements of the AOC holder's quality system, where applicable.

5 DEPLOYMENT

5.1 The AOC holder should monitor deployment of the FSDS, to ensure appropriate and realistic use of the documents, based on the characteristics of the operational environment and in a way which is both operationally relevant and beneficial to operations personnel. This monitoring should include a formal feedback system for obtaining input from operations personnel.

6 AMENDMENT

6.1 The AOC holder should develop an information gathering, review, distribution and revision control system to process information and data obtained from all sources relevant to the type of operation conducted.

Note: Aircraft manufacturers provide information for the operation of specific aircraft that emphasises the aircraft systems and procedures under conditions that may not fully match the requirements of operators. The AOC holder should ensure that such information meets its specific needs.

6.2 The AOC holder should develop an information gathering, review and distribution system to process information resulting from changes that originates from the AOC holder, including:

- (a) changes resulting from the installation of new equipment;
- (b) changes in response to operating experience;
- (c) changes in the AOC holder's policies and procedures;
- (d) changes in the air operator certificate; and
- (e) changes for purposes of maintaining cross fleet standardisation.

Note: The AOC holder should ensure that crew coordination philosophy, policies and procedures are specific to its operation.

6.3 A FSDS should be reviewed:

- (a) at least once a year;
- (b) after major events (mergers, acquisitions, rapid growth, downsizing, etc.);
- (c) after technology changes (introduction of new equipment); and
- (d) after changes in safety regulations.

- 6.4 The AOC holder should develop methods of communicating new information. The specific methods should be responsive to the degree of communication urgency.

Note: As frequent changes diminish the importance of new or modified procedures, it is desirable to minimise changes to the flight safety documents system.

- 6.5 New information should be reviewed and validated considering its effects on the entire FSDS.
- 6.6 The method of communicating new information should be complemented by a tracking system to ensure currency by operations personnel. The tracking system should include a procedure to verify that operations personnel have the most recent updates.

GUIDANCE 119REG19 GUIDANCE FOR REGULATION 19 ON ANR-119 – QUALITY SYSTEM

- 1 The AOC holder should establish a quality system that encompasses all aspects of his operations, including flight operations, continuing airworthiness management and/or engineering support. It should also commensurate with his scale and complexity of operation. **Appendix B** to this AC provides guidance on some activities to be included in the quality system specified in Regulation 19 of ANR-119.

- 2 Designating a person-in-charge for quality system
The intent of Regulation 19(3) of ANR-119 in appointing one single person to be the overall responsible for the quality system in the organisation is so that compliance monitoring of the entire scope of operations with the regulations and the AOC holder's procedures is consistent and coherent. In order to cater for the scale and complexity of operations involved, specific compliance monitoring for different departments, such as flight operations and continuing airworthiness etc. may be set up. CAAS may accept such arrangements as long as the single person-in-charge remains responsible for the integrity of the overall quality system.

- 3 A quality system manual, or equivalent, must be established. It may be acceptable if the contents of the quality system are comprehensively documented in the Operations Manual and Maintenance Control Manual.

4 QUALITY CONTROL AND ASSURANCE

4.1 General

- (a) The AOC holder's systems for quality assurance should take into account all of the facilities and procedures utilised to ensure safe operations and continuing airworthiness, at each of the AOC holder's locations where the aircraft may be operated.
- (b) Quality assurance should therefore be effective throughout the operation and maintenance of aircraft and quality auditing must ensure that control is being properly applied and achieving satisfactory results.
- (c) The AOC holder's quality assurance policies and systems should be described in the relevant document (such as Maintenance Control Manual for continuing airworthiness matters) together with the Quality Assurance audit programme.

- (d) The quality assurance duties should be performed by adequate and appropriately trained personnel).

4.2 Procedures

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

Note: This is particularly important where quality assurance personnel are also expected to perform other duties in the organisation, e.g. to issue CMR or other maintenance certification.

- (b) Independent quality audit checks should be carried out on a planned basis. Emphasis should be placed on the company systems employed to achieve and ensure their suitability and effectiveness. Some activities to be covered under quality assurance checks on continuing airworthiness are provided in **Appendix C** to this AC.
- (c) All quality checks should be recorded and assessed and any criticisms forwarded to the person responsible for the particular facility or procedure for corrective action to be taken. There should be a feed-back system for quality assurance staff to confirm that corrective action has indeed been taken and to ensure that persons concerned with any audit deficiency are kept aware of both the adverse report and the outcome.
- (d) The AOC holder should submit to CAAS regular reports on quality assurance overview including quality indicators.

5 Compliance Checklists

- 5.1 In order to monitor compliance (as required in Regulation 19(2) of ANR-119) with applicable requirements, the AOC holder should maintain compliance checklists against each applicable regulation such as the following:

- ANA
- ANR-91
- ANR-119
- ANR-121 (or ANR-135)
- ANR-98
- ANO

5.2 The format of the compliance checklist may be as follows:

Regulation	Compliance status	Evidence	References

GUIDANCE 119REG20 GUIDANCE FOR REGULATION 20 OF ANR-119 – CONTROL OF DOCUMENTATION

- 1 Each copy of a document should normally bear a control number and a list of holders should be maintained by the person responsible for issuing amendments. Where this system is not used, the AOC holder should have alternative arrangements for controlling the issue and amendment of documents.
- 2 For purpose of ensuring proper distribution of the documents, the AOC holder should institute a method of acknowledgment of receipt of amendments by document holders.
- 3 Each document or each volume of it should be numbered and bear a title and index giving a clear indication of its scope. The title of the person or department responsible for the issue of the document should also be indicated
- 4 At the front of each document there should be an amendment page to indicate amendment number, date of incorporation, signature or initials of person amending, and page or paragraph affected. Amended pages should be dated. The numbering of pages, sections, paragraphs, etc should be orderly and systematic so as to facilitate immediate identification of any part of the subject matter. The standard of printing, duplicating, binding, section dividers, indexing of sections, etc should enable the document to be read without difficulty and to ensure that it remains intact and legible during normal use.

GUIDANCE 119REG21 GUIDANCE FOR REGULATION 21 OF ANR-119 – APPROVAL OF THE OPERATIONS MANUAL

- 1 A copy of the entire operations manual, or its proposed amendment or revision, should be submitted to CAAS at least 30 days prior to its planned initial use for any operation or flight.

GUIDANCE 119REG22 GUIDANCE FOR REGULATION 22 OF ANR-119 – APPROVAL OF THE MAINTENANCE CONTROL MANUAL

- 1 A copy of the entire maintenance control manual, or its proposed amendment or revision, should be submitted to CAAS at least 30 days prior to its planned initial use.

GUIDANCE 119REG26 GUIDANCE FOR REGULATION 26 OF ANR-119 – HANDLING OF REPORTING OCCURRENCES

- 1 The responsibilities of Regulation 26 of ANR-119 should be assigned to a suitably senior official, with clearly defined authority, who would be the main point of contact with CAAS with regards to a reportable safety matter. Regulation 50, with the Second Schedule, of ANR-91 set out the requirements for reporting and list of reportable safety matters. The AOC holder should also refer to AC 91-2-2 and AC 1-4 for further guidance on reportable safety matters.
- 2 Operational and maintenance reporting to CAAS may be coordinated by one individual as long as it is integrated within the AOC holder's organisation.
- 3 The procedures should identify suitably qualified persons in various departments, such as maintenance and flight operations, of the AOC holder to ensure that occurrences with both airworthiness and operational implications are coordinated. In cases where maintenance is contracted, a suitably qualified engineer within the AOC holder's organisation should be assigned such responsibility. The assignment of these responsibilities should be clearly established in the Operations Manual and Maintenance Control Manual.
- 4 For avoidance of doubt, the AOC holder is responsible for reporting of occurrences on its aircraft even if maintenance is contracted out.
- 5 The procedures should incorporate appropriate care to ensure that the originators of reports are informed of the action taken, and where it would be useful in the interest of safety the circumstances of the incident should be made generally known within the AOC holder's organisation.

APPENDIX A COMPETENCY FOR NOMINATED APPOINTMENT HOLDERS

1 Nominated appointment holder – flight operations.

ANR-121 Operation	
Document required	Airline Transport Pilot License
Pilot-in-command experience	3 years as pilot-in-command under ANR-121 operations
Managerial experience	3 years in an operational control position

ANR-135 Operation		
	Multi Crew	Single Pilot
Document required	Airline Transport Pilot License	Commercial Pilot License, with Instrument Rating if operations include IFR
Pilot-in-command experience	3 years as pilot-in-command under ANR-121, ANR-125 or ANR-135 operations;	
Managerial experience	3 years in an operational control Position	

2 Nominated appointment holder - crew training and competency assessment

ANR-121 Operation	
Document required	Airline Transport Pilot License with ratings
Currency	Current to act as pilot-in-command of one type of operator's aircraft
Experience	3 years as pilot-in-command under ANR-121 or ANR-135 type operations and 2 years of experience in the check and training role

ANR-135 Operation		
	Multi-crew	Single pilot
Document required	Airline Transport Pilot License with ratings	Commercial Pilot License, with Instrument Rating if operations include IFR
Currency	Current to act as pilot-in-command of one type of operator's aircraft	
Experience	3 years as pilot-in-command under ANR-121 or ANR-135 type operations and 2 years of experience in the check and training role	

3 Nominated appointment holder - Continuing Airworthiness Management

3.1 ANR-121 Operations

3.1.1 The nominated appointment holder responsible for continuing airworthiness management in an organisation conducting commercial air transport operations under ANR-121 should:

- (a) have a clear knowledge and understanding of the maintenance aspects of the organisation's exposition and the applicable maintenance provisions of ANR-91 and ANR-121;
- (b) meet the requirements of paragraph 3.1.2; and

- (c) undertake any examination or test that CAAS may require to determine the applicant's competency to perform the maintenance planning and control functions required.

3.1.2 The nominated appointment holder in paragraph 3.1.1:

- (a) should:
 - (i) hold or have held an aircraft maintenance engineer license or equivalent, acceptable to CAAS, with appropriate ratings; and
 - (ii) have at least five years of experience in the maintenance of aircraft of a similar size and type as that to be operated by the organisation; and have at least two years of experience in a supervisory position which may be undertaken during the five years of experience required under subparagraph (b)(ii);

or

- (b) should:
 - (i) be a graduate engineer or equivalent in an aeronautical, mechanical or electrical discipline; and
 - (ii) have at least five years of experience in the maintenance of aircraft, which may be gained while working in maintenance supervision, maintenance planning, engineering development, or workshop environment; and
 - (iii) have at least six months of practical experience in aircraft maintenance tasks which may be undertaken during the five years of experience required under subparagraph (b)(ii); and
 - (iv) have at least two years of experience in a supervisor position which may be undertaken during the five years of experience required under subparagraph (b)(ii).

3.1.3 The experience expected in paragraph 3.1.2(a)(ii) and (b)(ii) may be met through a course of instruction acceptable to CAAS.

3.2 ANR-135 Operations

3.2.1 The nominated appointment holder responsible for the control and direction of maintenance in an organisation conducting commercial air transport operations under ANR-135 should:

- (a) have a clear knowledge and understanding of the maintenance parts of the organisation's exposition and the applicable maintenance provisions of ANR-91 and ANR-135; and
- (b) meet the requirements of paragraph 3.2.2; and

- (c) undertake any examination or test that CAAS may require to determine the applicant's competency to perform the maintenance planning and control functions required.

3.2.2 The nominated appointment holder in paragraph 3.2.1:

- (a) should meet the requirements of 3.1.1;

or

- (b) should:

- (i) hold or have held an aircraft maintenance engineer license or equivalent, acceptable to CAAS, with appropriate ratings; and
- (ii) have at least three years of experience of maintenance of aircraft of a similar size and type as that to be operated by the organisation; and
- (iii) have at least one year of experience of releasing aircraft to service, which may be undertaken during the three years of experience required under subparagraph (b)(ii);

or

- (c) should have experience acceptable to the CAAS including at least five years of experience of the control and direction of maintenance and the continuing airworthiness of aircraft of a similar size and type as that to be operated by the organisation.

3.2.3 The experience expected in paragraphs 3.2.2(b)(ii) and (c) may be met through a course of instruction acceptable to CAAS.

4 Nominated appointment holder – safety management system

4.1 The AOC holder may refer to the guidance provided in AC 119-2-4.

APPENDIX B EXAMPLES OF SOME QUALITY ASSURANCE ACTIVITIES

This appendix provides examples of some quality assurance activities that should be covered within the AOC holder's quality system.

- 1 Fuel Quality and Fueling System
 - 1.1 The AOC holder should satisfy himself that all fuel taken on board his aircraft is of a satisfactory quality.
 - 1.2 The AOC holder must comply with the provisions of the Air Navigation Order on Aviation Fuel at Aerodromes if he has a facility or vehicle in which fuel is stored and/or delivered to aircraft, as the ANO provisions apply to all fuel suppliers in Singapore to ensure that fuel dispensed is fit for use in aircraft.
 - 1.3 As part of his procedures, the AOC holder should:
 - (a) keep a record of the fueling arrangements at each station where fuel is uplifted, indicating the company or person responsible for monitoring the fuel supplier. This may be a nominated airline at each location, or the AOC holder may, himself, choose to monitor the supplier's quality performance;
 - (b) institute a fuel uplift sampling programme taking into account matters such as the following:
 - (i) Known supplier quality performance, including any history of contamination;
 - (ii) Local environmental conditions, e.g. likely sources of contamination including microbiological contamination;
 - (iii) Supply facilities;
 - (iii) Frequency of use.
 - (c) provide flight crew with guidance on the accomplishment of fuel uplift sample checks and clear instructions as to when these are to be carried out;
 - (d) provide maintenance personnel with guidance, in respect of fuel quality sampling, in relation to their station. Ensure that persons engaged in refueling activities are properly trained for their tasks;
 - (e) audit the arrangements as defined to ensure the continuing acceptability of fuel quality throughout the operation;
 - (f) specify a reasonable minimum frequency of fuel contamination checking, at the point of uplift, based on best practices.

2 Ground de-icing/ anti-icing

In his quality assurance programme, the AOC holder should establish procedures to ensure that his de-icing/ anti-icing facilities, if applicable, are available to support his operations and such procedures may include:

- (a) the checking of the de-icing equipment immediately before the commencement of winter operations and at intervals throughout the winter season to verify that the equipment is fully serviceable at each location where aircraft are likely to require de-icing;
- (b) the checking of Items such as mixer nozzles for correct calibration and proper installation;
- (c) testing of mixtures of de-icing fluids together with suitable conditions for the storage and identification of de-icing fluid;
- (d) where facilities for common use are provided at airports or this task is contracted out to a specialist organisation, such audit checks that must be carried out by the AOC holder to ensure that de-icing/ anti-icing of his type of aircraft are carried out effectively and in a manner to ensure safe operation.

3 Contracting out ground handling

- 3.1 The AOC holder may enter into Ground Handling Agreements with other organisations for the provision of services associated with aircraft arrival, turnaround and dispatch. In these cases, a written agreement should detail the tasks to be performed on behalf of the AOC holder.
- 3.2 The AOC holder should ensure that maintenance or flight crew personnel responsible for accepting the aircraft for flight are made aware of any matter which is not included in the agreement at that station.
- 3.3 The AOC holder should clearly define the responsibilities for typical matters such as:
 - (a) opening and securing of aircraft hold doors: securing and locking when loading is complete;
 - (b) draining of water from aircraft fuel tanks;
 - (c) maintaining communication between flight deck and ground personnel.
- 3.4 This list is not exhaustive and may vary among AOC holders and from station to station. Company instructions to flight crew and maintenance personnel should identify responsibilities in each case.
- 3.5 The AOC holder's quality assurance programme should ensure that the continuing performance of the ground handling contractor results in safe operation of the AOC holder's aircraft, and that necessary initial and recurrent training has been performed.

APPENDIX C GUIDANCE FOR QUALITY ASSURANCE CHECKS ON CONTINUING AIRWORTHINESS

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

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

- 2 Checks on Aircraft whilst undergoing Scheduled Maintenance for:

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

- 3 Checks on Aircraft in Service for:

- (a) compliance with company approved practices for cargo restraint, load distribution and spreading, such that the approved modifications for cargo configurations are observed;
- (b) procedures to ensure that the APS weight data in use reflects the aircraft configuration and weight and balance schedule;
- (c) satisfactory condition of cargo/baggage compartments and their linings, cargo handling and restraint equipment and special provisions for the carriage of livestock and attendants;
- (d) continuing compliance with CAAS Airworthiness Notices in respect of cabin and other safety provisions.

- 4 Checks on Technical Logs for:

- (a) correct completion of sector record pages and their transmission to technical records;

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

5 Checks on Technical Service Information for:

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

6 Checks on the AOC holder's General Airworthiness Control Procedures for:

- (a) responding to the requirements of Airworthiness Directives, mandatory modifications and inspections, CAAS Airworthiness Notices and special fleet checks instituted in response to occurrences etc;
- (b) monitoring company practices in respect of scheduling or pre-planning maintenance tasks to be carried out in the open, and adequacy of the facilities provided;
- (c) effective completion of maintenance reviews at intervals required by the approved maintenance schedule and the availability of information to the certificate signatory;
- (d) operation of the defects analysis system for the AOC holder's airframes, engines and systems and its integration with the system for mandatory

occurrence reporting; the highlighting of repetitive defects and the control of deferred defects;

- (e) approval of personnel to perform inspections and maintenance tasks on the AOC holder's aircraft and for the issue of CMR and CRS; the effectiveness and adequacy of training and the recording of personnel experience, training and qualifications for grant of authorisation;
- (f) the effectiveness of technical instructions issued to maintenance staff;
- (g) the adequacy of staff in terms of qualifications, numbers and ability in all areas of support for the AOC holder which affect airworthiness;
- (h) the completeness of the quality audit programme;
- (i) compliance with the requirements of the approved Maintenance Schedule, including maintenance/inspection periods, component overhaul/test/calibration control, records of cycles/landings etc and for granting variations at the request of the AOC holder;
- (j) maintaining logbooks and other required records on behalf of the AOC holder;
- (k) ensuring that major and minor repairs are only carried out in accordance with approved repair schemes and practices.

7 Checks on Stores and Storage Procedures for:

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

- 8 Checks on Maintenance Facilities for:
- (a) cleanliness, state of repair and correct functioning of hangars, hangar facilities and special equipment, and the maintenance of mobile equipment;
 - (b) adequacy and functioning of special services and techniques including welding, NDT, weighing, painting;
 - (c) viewer/printer equipment provided for use with micro-fiche, micro-film and compact disk ensuring regular maintenance takes place and an acceptable standard of screen reproduction and printed copy are achieved;
 - (d) the adequacy of special tools and equipment appropriate to each type of aircraft, including engines, propellers and other equipment.
- 9 Checks on Line Stations, in addition to the foregoing as applicable, for:
- (a) the adequacy of facilities and staff;
 - (b) the provision of covered accommodation for aircraft when maintenance is undertaken which requires a controlled environment, and for the accomplishment of work in the open where this is unavailable;
 - (c) the cleanliness, state of repair, correct functioning and maintenance of ground support equipment including ground de-icing/anti-icing equipment;
 - (d) the effectiveness of any sub-contracted arrangements for ground handling, servicing and maintenance support and compliance with the AOC holder's contracted arrangements;
 - (e) quality monitoring of fuel supplies including supplier checks and uplift contamination checks; the effectiveness and completion of fuel tank water drain checks;
 - (f) the care and maintenance of cargo containers, freight nets, pallets and other cargo equipment;
 - (g) the currency, scope and effectiveness of locally raised technical instructions and the procedure for bringing them to the notice of maintenance personnel;
 - (h) adequacy of the technical publications held at the station for the AOC holder's aircraft, their currency and procedures for amendment;
 - (i) the accuracy and control of worksheets or cards, to ensure that only up-to-date issues are used.