

# Advisory Circular

## GUIDANCE ON MAINTENANCE REQUIREMENTS FOR OPERATIONS UNDER ANR-135

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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 continuing airworthiness of aircraft used for operations under ANR-135.

### APPLICABILITY

This AC is applicable for the AOC holder operating in accordance with ANR-135.

### RELATED REGULATIONS

This AC relates specifically to Division 7 in Part 2 of ANR-135.

**RELATED ADVISORY CIRCULARS**

Nil.

**CANCELLATION**

This is the first AC issued on the subject.

**EFFECTIVE DATE**

This AC is effective from 1 October 2018.

**OTHER REFERENCES**

Nil.

## **1 GENERAL**

- 1.1 As required by Division 7 in Part 2 of ANR-135, the AOC holder has to establish various systems and procedures regarding continuing airworthiness of his aircraft and documentation such as his maintenance control manual (see AC 135-12-1). The AOC holder also has to comply with the airworthiness related requirements in the Air Navigation Order (ANO) and ANR-91. This AC provides guidance and considerations for the AOC holder for managing the maintenance of his aircraft.

## **2 ARRANGEMENT FOR FOREIGN REGISTERED AIRCRAFT**

- 2.1 Where the AOC holder operates a foreign registered aircraft (for example under a dry lease) among his fleet, the AOC holder has to comply with the continuing airworthiness requirements of the State of Registry, including maintaining the aircraft in accordance with its approved maintenance programme and establishing arrangements that are acceptable to the State of Registry.
- 2.2 The AOC holder should provide, for use and guidance of maintenance and operational personnel concerned, the maintenance programme of the foreign aircraft that has been approved by the State of Registry. The AOC holder must review and ensure the maintenance programme of the foreign aircraft is effective. The arrangements for the maintenance of foreign registered aircraft should align with the following paragraphs.

## **3 CONTRACTED OUT MAINTENANCE**

### **3.1 General**

- 3.1.1 The arrangement to contract out the engineering and maintenance support to another organisation do not absolve the AOC holder of the overall responsibility to ensure the safe operation and continuing airworthiness of the aircraft.
- 3.1.2 As specified in Regulation 126(5) of ANR-135, the maintenance agreement is subject to the acceptance of the DGCA and is to be incorporated as part of the Operations Specification of the AOC (see AC 119-1-1). Matters to be addressed in such an agreement are contained at **Appendix A**.
- 3.1.3 The AOC holder should assign a person to manage the maintenance agreement. This person will be responsible to the AOC holder; for planning the timely presentation of the aircraft to the maintenance support organisation for all contracted maintenance; for liaison on all matters relating to the maintenance agreement and for airworthiness matters affecting the safe operation of the aircraft.
- 3.1.4 The AOC holder should assure himself at the inception of the agreement, and periodically thereafter, that the contracted organisation competently discharges its responsibilities under the agreement and maintains the standards agreed. Reports of all such visits or audits by the AOC holder should be kept and made available to the CAAS on request.
- 3.1.5 The AOC holder should not contract more than one maintenance organisation for the airworthiness control of a particular aircraft type, except for maintenance support at route stations or where a distinct division of aircraft is established, e.g. different maintenance schedules apply.

- 3.1.6 The AOC holder may only arrange with other contractors apart from the principal contractor (main SAR-145 AMO selected to perform aircraft maintenance for the AOC holder) for the maintenance, overhaul and repair of engines and other components provided such arrangements do not jeopardise the agreed airworthiness control responsibility of the principal contractor.
- 3.1.7 To discharge his responsibilities for the continuing airworthiness and to issue the Certificates of Maintenance Review (CMR) for the aircraft, the AOC holder should ensure, on a continuing basis, that the requirements of the approved maintenance schedule are complied with. This may include condition monitoring and reliability reporting, and be made aware of any significant performance trends.
- 3.1.8 In its assessment of the overall engineering support arrangements provided by the AOC holder, the CAAS may examine or request copies of all agreements, including side letters and addenda, between the parties concerned.
- 3.1.9 The AOC holder should notify the CAAS at least one month in advance of any proposal to change the maintenance arrangements, e.g. a change to another maintenance organisation or significant organisational, procedural or technical change to a maintenance agreement.

### 3.2 Contracting out Full Support

- 3.2.1 The AOC holder may contract full maintenance support to an organisation approved by the DGCA in accordance with SAR-145 for the maintenance or overhaul of the type(s) of aircraft concerned.
- 3.2.2 When the AOC holder presents an aircraft for scheduled or unscheduled maintenance by the contracted organisation, the AOC holder should provide a precise indication of the inspections required, all defects known to exist on the aircraft plus any additional work required to be carried out.

Note: The AOC holder should appreciate that a maintenance organisation cannot carry out work or certify inspections without his instructions or agreement. The AOC holder should be specific when making known his work requirements to the contracted organisation. Difficulties regularly occur because there is a misunderstanding between customer and maintenance organisation as to the former's requirements.

- 3.2.3 The AOC holder should made available to his maintenance contractor all tasks completed and certificated during line maintenance or by other organisations or engineers.

### 3.3 Contracting out Line Maintenance Support

- 3.3.1 Line maintenance refers to those maintenance activities required to prepare an aircraft for flight including:
  - (a) Pre-flight inspections and servicing.
  - (b) Daily inspections.
  - (c) Minor scheduled maintenance.
  - (d) Defect rectification.

- 3.3.2 A written agreement should be established between the AOC holder or his principal contracted maintenance organisation and the organisation contracted for the performance of line maintenance, with details of the tasks to be performed on behalf of the AOC holder. The arrangements should be defined in the MCM so that responsibilities procedures and communication paths are made clear to all concerned.
- 3.3.3 The authorisation of maintenance personnel employed by the line maintenance contractor should conform to any requirements and limitations imposed by the conditions of the approval granted by the DGCA.
- 3.3.4 It is the responsibility of the AOC holder to ensure that the continuing performance of the line maintenance contractor meets the requirement to ensure safe operation of the AOC holder's aircraft.
- 3.3.5 The AOC holder or his principal contracted maintenance organisation may sub-contract a maintenance organisation to perform line maintenance activities outside Singapore under the provision of SAR-145.1(i). For avoidance of doubt, the AOC holder remains responsible for the sub-contractor's performance, including the timeliness for a SAR-145 application to support the AOC holder's operations.
- 3.4 Contracting out Ground Handling
- 3.4.1 The AOC holder may enter into Ground Handling Agreements with other organisations for the provision of services associated with aircraft arrival, turnaround and dispatch. Similarly, a written agreement has to be established with details of the tasks to be performed on behalf of the AOC holder.
- 3.4.2 As part of the requirements for Operational Manual under ANR-135, 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. Responsibilities for typical matters such as the following should be clearly defined:
- (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.
- 3.4.3 This list is not exhaustive and may vary from AOC holder to AOC holder and station to station.
- 3.5 Contracting out Engine Maintenance
- 3.5.1 When the AOC holder chooses to contract-out maintenance of engines separately from the overall arrangements existing for maintenance support of the aircraft, the AOC holder should ensure that the principal maintenance contractor:
- (a) fully understands the arrangements;
  - (b) is kept continuously aware of engine condition monitoring and any adverse trends in reliability or performance which arise, if he is not directly a party to such monitoring;

- (c) is made aware of the status of engines fitted to aircraft in respect of modifications, service bulletins and airworthiness directives;
  - (d) liaises with the engine maintenance contractor in respect of the requirements of the approved maintenance schedule for the aircraft so that the engine maintenance reflects the needs of the aircraft for airworthiness.
- 3.5.2 The AOC holder should ensure that at all times, the responsibilities of all parties are clearly defined and documented.

## **4 INSTRUCTIONS TO MAINTENANCE PERSONNEL**

- 4.1 To supplement the Maintenance Control Manual, the AOC holder should also have a system of bulletins or instructions to advise maintenance personnel of matters of immediate technical importance, and to disseminate company practices where these differ from other published information.
- 4.2 The bulletins and instructions should be:
- (a) Distributed individually to maintenance personnel or in such a way that each person has access to a copy and there is a record to show that he has seen each document issued.
  - (b) Numbered sequentially, and with the revision status and approval date clearly indicated.
  - (c) Identified as to the content, e.g. by ATA Chapter or by aircraft type number so as to permit easy access to particular subjects.
- 4.3 The need for the issue of instructions is expected to be based on in-service experience of the aircraft being operated and maintained, and that the AOC holder finds a need to respond with guidance to maintenance personnel. The AOC holder should also review other sources of information such as CAAS Airworthiness Notices, in-service experience reports and similar continuing airworthiness information published by airworthiness authorities and manufacturers.
- 4.4 Where instructions are issued which conflict with, or vary from, information published by manufacturers or other sources it must be clearly shown which information takes priority. It must also be ensured that instructions cannot be construed as overriding published mandatory information or concern matters beyond the scope of the approval held by the organisation.

## **5 TECHNICAL RECORDS**

- 5.1 The AOC holder should assign a department to be responsible for the compilation and co-ordination of technical records. It should maintain a data recording system:
- (a) Such that it is possible to ensure that the hours of service or elapsed times quoted in the approved maintenance schedule are not exceeded as regards components and structural assemblies, and that scheduled maintenance periods are adhered to.

- (b) To record the number of landings, flights or cycles, and the use of maximum contingency or intermediate contingency power, when this information is specified in the approved maintenance programme or manufacturer's manuals as a basis for inspection or other necessary action.
  - (c) To process the foregoing information into aircraft, engine and propeller log books or equivalent records, to maintain the records and documents concerning overhaul and repair work, component changes, mandatory modifications and inspections and to maintain a modification record book.
  - (d) To maintain records required by the Singapore Airworthiness Requirements Section 4, Chapter 4.6.
- 5.2 A technical records system may be computerised. In this case procedures should be instituted to ensure that the computerised record provides security, storage, preservation and retrieval to the same level as would have been achieved by hard copy records. The DGCA's acceptance of computerised recording does not exempt the AOC holder or his contracted maintenance organisation from complying with the appropriate provisions of the ANO for the keeping and retention of records.
- 5.3 Records should be structured or stored in such a way as to facilitate auditing.

## **6 DOCUMENTATION FOR MAINTENANCE CHECKS**

- 6.1 The department responsible for technical records should also be responsible for the accuracy of the documents issued for a maintenance check. A procedure should be established to ensure that only documents incorporating the latest amendments are issued, and that all superseded documents are withdrawn and cancelled. Working documents made available for use by maintenance staff such as worksheets or cards should include:
- (a) A list of inspections, checks or work items required to meet the requirements of the approved maintenance programme and adequate directions for their implementation.
  - (b) The part numbers and serial numbers (unless not relevant to component control) of all components to be removed and replaced, and their locations on the aircraft.
  - (c) Details of any modifications which have to be incorporated during the check.
  - (d) Any mandatory or special inspections, or any other checks which are required to be made by the AOC holder in addition to those required by the approved maintenance programme.
  - (e) Detailed procedures for engine runs, engine or propeller change, fuel flow tests, duplicate inspection of controls, landing gear retraction tests etc., as applicable.
  - (f) A list of outstanding deferred and carried forward defects.
- 6.2 Additional worksheets or cards should be provided for recording the work completed as a result of the maintenance check and any defects arising from inspections.

- 6.3 All worksheets or cards should be readily identifiable and bear an issue number. They should also be identified to associate them positively with the relevant items in the maintenance programme. The procedures for documentation control should ensure that if any worksheet or card is mislaid or lost, it would be readily apparent on completion of the check, and that each 'pack' of worksheets or cards is complete and certified before the aircraft is released for service.
- 6.4 Before issue, all worksheets or cards should be recorded on a 'workpack control' sheet which should also state the following:
- (a) Name and CAAS Approval reference of the maintenance organisation.
  - (b) Aircraft type and registration marks.
  - (c) The maintenance checks to be carried out.
  - (d) The date.
  - (e) The approved maintenance programme reference number and amendment state.
  - (f) The name of the AOC holder.
- 6.5 The AOC holder should have procedures to ensure that technical records are not destroyed before the required detention periods.
- 6.6 The compilation of maintenance check documentation may, alternatively, be allocated to a maintenance planning department. In such cases the maintenance control manual should contain details not only of the procedures of the planning department through which the documentation is compiled but also of the monitoring programme as part of the AOC holder's quality assurance.

## **7 AIRWORTHINESS DIRECTIVES AND MANUFACTURERS TECHNICAL INFORMATION**

- 7.1 The AOC holder's procedures for reviewing and implementing action resulting from mandatory continuing airworthiness information should take the following into account:
- (a) The assessment of incoming technical information from manufacturers, including Service Bulletins, relating to relevant aircraft types.
  - (b) Initiating action as necessary on such information, particularly in relation to the Maintenance Schedule.
  - (c) Responding to requests by the manufacturer and the CAAS for 'in-service' experience reports.
- Note: The CAAS may require access to an AOC holder's assessments of manufacturer's service information to assist in evaluation of such information for the purpose of possible mandatory classification.
- 7.2 When airworthiness information from the manufacturer is received, the AOC holder should make an immediate assessment to establish priority of response. Matters of



significant airworthiness importance, such as those having an impact on ETOPS flights, should be responded to promptly.

- 7.3 By means of modification records, technical records, log books or other means, the AOC holder should be able to establish the status of compliance with directives and service information for each of the AOC holder's aircraft.
- 7.4 The AOC holder should ensure that the relevant aircraft manufacturer is aware that he is a current user of his aircraft so that all relevant service information, details of in-service experience of the aircraft and amendments to manuals, including the Flight Manual, are received and embodied in a timely manner. This is especially important where the AOC holder is not the original owner of the aircraft, or it has been leased from the owner.

## **8 DOCUMENT MANAGEMENT**

- 8.1 The AOC holder should establish a technical library to hold and make available to personnel concerned the necessary technical data, e.g. CAAS publications, the regulations, manufacturer's manuals, any relevant service information, any other related literature appropriate to the aircraft types and copies of appropriate company manuals, procedures and Instructions. A person should be appointed to be responsible for the technical library.
- 8.2 Arrangements should be made for the supply of amendments, so that all publications are kept up-to-date, and for departments concerned to be notified of such amendments, and of any additional technical information relevant to the work undertaken.
- 8.3 Arrangements should be made for all technical drawings to be suitably stored and a procedure operated to ensure that only drawings of the correct issue are released. A person should be made responsible for maintaining an up-to-date record of drawings available and also for notifying departments concerned when drawings have been superseded by a later issue.

## **9 SPARES**

- 9.1 Provision and Storage. The AOC holder should provide for sufficient spares to be available so that aircraft, engine and equipment defects can be rectified. Spares should be located where they will be required to be used.
- 9.2 Account has to be taken of the AOC holder's Minimum Equipment Lists (MEL) to ensure that essential spares to support the rectification of defects in systems required for operation are placed where they are most likely to be needed and in such numbers as to ensure that successive defects can be addressed.
- 9.3 Spares provisions at each maintenance location should be determined when the particular base or station is commissioned and published in the AOC holder's instructions/procedures defining the maintenance operations undertaken at the particular location.

- 9.4 Spares holdings should be reviewed at regular intervals at all locations to ensure that:
- (a) Superseded parts, or those with out of date modifications states, are removed for replacement or up-dating.
  - (b) Airworthiness Directives and other mandatory requirements published while parts are in storage are complied with before the part is released for service.
- 9.5 Storage Procedures. Every spare has to be stored, at all times and locations, in accordance with its manufacturer's instructions and in such a manner such that it remains airworthy and fit for use when required. The following should be considered in the storage procedures.
- (a) Procedures to control the return to stores of items issued for use but not needed, especially where the item has been installed in the aircraft and subsequently removed. The removal of components from completed assemblies must be controlled and identified.
  - (b) Spares having a limited allowable shelf life, including materials and consumable products, should be identified and controlled.
  - (c) Stores references or batch numbers should be recorded on worksheets, cards or technical log pages so as to facilitate subsequent tracing of the associated part to source.
  - (d) Management procedures and conditions of storage should be reviewed regularly to ensure that satisfactory standards are being implemented.

## **10 DEFECTS AND OCCURRENCES**

- 10.1 The AOC holder should have a system for the tracking and assessment of defects and occurrences. Both the cause and any potentially hazardous effect of defects or combination of defects, and occurrences, should be assessed. Further investigation and analysis should then be initiated as necessary.
- 10.2 A system of assessment e.g. through reliability programme, should be in operation to support the continuing airworthiness of aircraft and to provide a continuous analysis of the effectiveness of the AOC holder's control systems in use.
- 10.3 The system should provide for the following:
- (a) Significant Incidents and Defects. The monitoring on a continuous basis of incidents and defects that have occurred in flight and of defects found during maintenance and overhaul, highlighting any that appear significant in their own right.
  - (b) Repetitive Incidents and Defects. The monitoring on a continuous basis of defects occurring in flight and found during maintenance and overhaul, highlighting any that are repetitive.
  - (c) Deferred and Carried Forward Defects. The monitoring on a continuous basis of deferred and carried forward defects.

- (d) **Unscheduled Removals and System Performance.** The analysis of unscheduled component removals and of the performance of aircraft systems; and its use as part of a maintenance

## **11 DEFERRED AND CARRIED FORWARD DEFECTS**

- 11.1 The AOC holder should also have a system for controlling deferred and carried forward defects.

Note:

- (1) Deferred defects are defined as those defects reported in operational service which is deferred for later rectification.
- (2) Carried forward defects are defined as those defects arising during maintenance which are carried forward for rectification at a later maintenance input.

- 11.2 The system should take into account the cumulative effect of a number of deferred or carried forward defects occurring on the same aircraft, and ensure that any restrictions contained in the Minimum Equipment List is observed. Deferred defects should be made known to the flight crew.
- 11.3 The period for which defects are deferred or carried forward should reflect the importance of the defect as it affects airworthiness and/or safe operation. Limitation periods to be applied should be established (e.g. flight hours, calendar time, number of sectors, return to base). The number of deferred defects and the length of time during which each defect is deferred should be kept to a minimum.
- 11.4 The system should provide for the traceability of each defect, including:
  - (a) original date of the defect;
  - (b) proper transfer of deferred defects to worksheets at maintenance periods, and proper re-entry on to a new deferred defect record sheet for deferred defects which have not been actioned during maintenance periods; and
  - (c) cross reference in the Technical Log in which the defect was first entered.
- 11.5 The system should also enable the necessary resources including components or parts to be made available so that the defect can be rectified at the earliest opportunity.

## **12 REPETITIVE DEFECTS**

- 12.1 There should be a system to control and monitor repetitive defects on a continuous basis appropriate to the number of aircraft operated and the nature of the operation. The history of any repetitive defect should not be lost or overwritten during scheduled inspections. An alert number of repetitions of a particular defect should be established. The Quality Manager or appropriate senior management should pay attention to such repetitive defects especially when the alert is triggered and ensure necessary actions are taken to obviate a further repetition.
- 12.2 Details of defects should be recorded in a standardised way to assist in identifying which problems are repetitive. All maintenance personnel, including those at line and outstation, should have access to such information.

### **13 AIRCRAFT EXTERNAL DAMAGE MARKING**

- 13.1 The AOC holder should have a system for identifying and recording external damages including scratches and dents during inspection. The assessment and acceptance of the damage should be recorded.
- 13.2 The record should be kept in the aircraft and readily enable the identification of new damages. It may use pictorial diagrams or by use of a grid referencing system. Such records may be included in the Technical Log or another readily available document.
- 13.3 When considered desirable as a means of prompt recognition of accepted damage, the actual damage may be marked using a suitable method of identification.
- 13.4 The damage record for each aircraft should be reviewed by the AOC holder from time to time to ensure that it has been kept up to date, that repaired damage is not removed from the aircraft record and that the cumulative effects of damage do not exceed manufacturers limitations.

### **14 CABIN RECONFIGURATION - APPROVAL AND CONTROL**

- 14.1 Any change to the cabin configuration from that for which the aircraft was first certificated constitutes a modification which must be approved by the DGCA.
- 14.2 Revised or alternative seating layouts, the fitting of stretchers or the conversion of the cabin to a cargo carrying role all constitute modifications which should conform to an approved design and be certified with the issue of a Certificate of Release to Service (CRS). CRS should be issued for each change of configuration, including a restoration to the previous configuration. The CRS should refer to the modification being embodied or removed but may do so through reference to a company instruction or role diagram, etc which directly records compliance with the requirements of the modification.
- 14.3 The operations manual and instructions to maintenance personnel should contain precise descriptions, preferably pictorial, of the approved configuration and any limitations to be observed. It is recommended that the various actions necessary are summarised in a checklist in each case, particularly in respect of the fitting or securing of emergency equipment and exits. Checklists should be readily available to personnel when carrying out configuration changes.
- 14.4 Where any possibility of error exists, such as in the position of seats and of fitting incorrect seats at and adjacent to emergency exits, the aircraft and the item to be fitted should be clearly marked and the pictorial diagram of the configuration should illustrate the arrangement.
- 14.5 Clear and easily interpreted guidance should be given to persons responsible for loading and securing the aircraft for flight so that the conditions of the approved modification are observed. In cases where the main cabin is used for the carriage of cargo it should be possible to readily install a configuration embodying methods of restraint which will ensure compliance with cabin design limitations without the need for extensive calculations at the point of dispatch.
- 14.6 All cabin configurations should be fully represented in aircraft prepared for service weights and indices used in the loading calculations made prior to flight dispatch.

- 14.7 Approved modifications for cargo configurations should contain the various restraint practices used by the AOC holder to facilitate the satisfactory carriage of different types.
- 14.8 The cargo containers and pallets used either in cargo holds or the main cabin, particularly where the container itself is designed to provide necessary restraint and, in some cases, fire containment should also be properly maintained. Care and maintenance should include details of permissible damage and any limitations, procedure for the assessment of containers and details of repair action to be taken.

## **15 AIRCRAFT FURNISHINGS**

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

## **16 MAINTENANCE OF CABIN AND OTHER SAFETY PROVISIONS**

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

- (f) Inspection of catering carts and trolleys, brakes, restraints and placards.
- (g) Functional test of inflatable escape chutes and flotation devices (aeroplanes and helicopters).
- (h) Continuity integrity of toilet fire precautions.
- (i) Protection of life rafts and flotation bags from damage after deployment.
- (j) Compliance with approved cabin configuration for seat positions, access to exits and minimum space for seated passengers, particularly where seats are regularly removed and refitted.
- (k) Statutory provisions for the marking of exits and break-in areas.

## **17 AIRCRAFT WITH NETWORKED SYSTEM**

- 17.1 For an AOC holder who operates an aeroplane that has been specified by the aircraft manufacturer to require an Aircraft Network Security Programme (ANSP), the AOC holder may refer to AC 121-7-2 for the development and implementation of a management process to sustain the overall security of the aircraft network.

Note: An aircraft requiring an ANSP to operate can be identified by a Special Condition (SC) listed on the Type Certificate Data Sheet (TCDS) or, if later modified, will be identified in the Supplemental Type Certificate (STC) or Amended Type Certificate (ATC) with a SC.

- 17.2 As software installed and data loaded on to an aircraft will affect its airworthiness, the AOC holder should adhere strictly to the aircraft manufacturer's advices in safeguarding the integrity, confidentiality and security of the aircraft's computer systems and networks.

## APPENDIX A            GUIDANCE FOR MAINTENANCE AGREEMENT

- 1        Where the AOC holder chooses to contract maintenance to another organisation, a written agreement must be drawn up indicating the divisions of responsibility between the two parties for the overall support of the aircraft and for compliance with statutory regulations and other relevant requirements.
- 2        The purpose of the agreement is to demonstrate a firm commitment by the two parties to the maintenance support of the aircraft that is operating, or to be operated, under an AOC.
- 3        The maintenance agreement should clearly identify clearly the tasks which are to be accomplished by the contractor and those tasks which will remain the responsibility of the AOC holder. For example, the AOC holder retains responsibility for line maintenance or spares provision.
- 4        The agreement should address the following matters:
  - (a)      general arrangements for support of the operation by the maintenance organisation, and for technical liaison between AOC holder and Maintenance Organisation;
  - (b)      accomplishment of maintenance at the approved locations of the maintenance organisation;
  - (c)      provision of appropriately approved/licensed maintenance personnel sufficient in numbers for the completion and certification of scheduled maintenance, the rectification of defects and the completion of duplicate inspections;
  - (d)      training of maintenance personnel and, where necessary, the AOC holder's flight crews;
  - (e)      arrangements for line maintenance and ground handling at the AOC holder's route stations, including major unscheduled arisings such as engine changes and defects requiring major dismantling or jacking;
  - (f)      control and development of the Maintenance Schedule in response to service experience and manufacturers recommendations, the management and operation of reliability programmes, the preparation of documentation needed to implement the schedule and the arrangements for granting variations to the maintenance schedule requirements;
  - (g)      airworthiness occurrence control and reporting to the manufacturer and the CAAS including MOR, and the control of deferred and repetitive defects;
  - (h)      maintaining logbooks, component service history, maintenance and other technical records and the transmission of Sector Record page information from the AOC holder to the maintenance organisation;
  - (i)      manufacturer's Service Bulletins/Information received, assessed and incorporated into modifications and manufacturer's technical programmes;

- (j) compliance with mandatory requirements including mandatory modifications and inspections, and Airworthiness Directives, and for responding to other maintenance and airworthiness requirements published by the responsible Authorities;
- (k) provision of spares, their storage and acceptance;
- (l) ensuring the availability of the necessary tools and equipment to complete the scheduled maintenance and any other work arising under the terms of the agreement;
- (m) provision of suitable maintenance accommodation at all locations where maintenance take place, appropriate to the task;
- (n) quality auditing of the maintenance arrangements, including in particular the systems and procedures employed to achieve the control of airworthiness, at main base, line stations and en-route wherever support and ground handling takes place.

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