

**Civil Aviation  
Advisory Publication  
April 2002**

# Certificate of Approval — Maintenance Organisation

*This publication is advisory only but it gives the preferred method for complying with the Civil Aviation Regulations 1988 (CAR 1988).*

*It is not the only method, but experience has shown that if you follow these procedures you will comply with the regulations.*

*Read this advice in conjunction with the appropriate regulations.*

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## The relevant regulations and other references

- Regulation 30 and 30A of *Civil Aviation Regulations 1988* (CAR 1988)
- Regulation (2D) of CAR 1988

## Who this CAAP applies to

This CAAP applies to any person holding, or intending to apply for, a certificate of approval for maintenance of aircraft, aircraft components or aircraft materials under the provisions of regulation 30 of CAR 1988.

## Why this publication was written

This CAAP provides guidance to applicants when applying for a certificate of approval or any changes to an existing certificate. It also describes acceptable procedures for holders of certificates of approval to maintain their certificates.

This CAAP includes ICAO and internationally recognised terminology and best practice in maintenance.

## Status of this CAAP

CAAP 30-1(1) contained all CAR 30 approvals including, maintenance, manufacturing, distribution, training and design organisations. This CAAP 30-4(0) covers maintenance of aircraft, aircraft components and aircraft materials. The approvals of other activities will be covered by CAAPs on the following subjects, when published:

- Distribution organisation
- Training organisation
- Design organisation.

## For further information

Contact CASA Service Centre (for contact details refer to paragraph 3.1.1 of this CAAP).

## 1. General

1.1 The *Civil Aviation Act 1988* states a person must not carry out maintenance unless the person is permitted to carry out that maintenance.

1.2 Regulation 30 of CAR 1988 sets out requirements in relation to an application for the grant and regulation 30A of CAR 1988 for change(s) to a certificate of approval. The regulation also provides standards for ongoing compliance, which must continue to be met if a certificate of approval holder wishes to maintain the certificate.

1.3 A person may apply to the Authority for a certificate of approval to engage in maintenance of aircraft, aircraft components or aircraft materials.

1.4 A certificate of approval may be granted for any or all of the following activities:

- On-wing maintenance of aircraft:
  - maintenance on aircraft airframes
  - maintenance on aircraft engines
  - maintenance on aircraft radio systems
  - maintenance on aircraft electrical systems
  - maintenance on aircraft instruments

*Note 1: On-wing maintenance requires all certifications are made in the aircraft records. This does not prevent a part being removed or replaced on the aircraft.*

- maintenance of aircraft components:
  - maintenance on aircraft airframes' components
  - maintenance on aircraft engines' components
  - maintenance on aircraft radio systems' components
  - maintenance on aircraft electrical systems' components
  - maintenance on aircraft instruments' components

*Note 2: Off-wing maintenance requires all certifications are made in the component maintenance records.*

- maintenance of aircraft materials.

*Note 3: Compliance with the requirements of regulation 30 of CAR 1988 does not remove the responsibility of the applicant from complying with other Commonwealth, State, Territory or Local Government regulations.*

1.5 This CAAP sets out the criteria that CASA would expect an applicant for a certificate of approval to meet prior to certification as an approved maintenance organisation. Meeting these criteria should ensure that the applicant will

have the procedures, equipment and staff necessary to ensure that aviation safety is not compromised, thus satisfying government, CASA, and public expectation.

## 2. Definitions

*Approved Maintenance Organisation (AMO)*, for the purpose of this publication, means the holder of a CASA issued certificate of approval to certify that maintenance, overhauls, repairs, modifications, replacements, inspections and tests of aircraft, engines and components thereof, have been carried out in conformity with specified airworthiness standards.

*Accountable manager* is the certificate of approval holder or person nominated by the legal entity holding the certificate of approval and means the manager who has been given corporate authority for ensuring that all maintenance required can be financed and carried out to the standards required by the regulations.

*Certifying staff* means those personnel holding appropriate qualifications, and where relevant, CASA authorisations and licences, who are authorised by the approved maintenance organisation in accordance with a procedure acceptable to the Authority.

## 3. How to obtain a certificate of approval

### 3.1 APPLICATION PHASE

3.1.1 When applying for a certificate of approval or change(s) to the same, the applicant should complete CASA Form “Application for Grant, Re-Issue or Change of a Certificate of Approval” and send it to the CASA Service Centre at:

PO Box 836  
Fortitude Valley  
Queensland 4006  
Phone: 136-773  
Facsimile: (+61) 7 3842-2580  
Email: [regservices@casa.gov.au](mailto:regservices@casa.gov.au)

*Note 4: For re-issue of a certificate of approval that has an expiry date, where there are no changes to the current approval, only page one of the application form duly completed need to be submitted.*

*Note 5: If an application is received less than 30 days prior to the expiry date of the current certificate, the Authority does not guarantee the new certificate will be issued before the current certificate expires.*

3.1.2 To assist the Authority to assess the application and to ensure that the certificate is issued to a legal entity, the application should include the following information and supporting documents, as applicable:

- Organisation's details:
  - Evidence of the legal entity (corporation or individual)
  - Australian Corporation Number (ACN)
  - Evidence of legally registered trading name, if intended to be used
  - Aviation Reference Number (ARN), if known
  - Registered business address.

*Note 6: The Authority will not accept applications from business names that are not recognised as a legal entity.*

- For an individual, formal identification
- Details of scope of activities to be undertaken
- Details of any other permanent locations away from the main facility
- Statement detailing the number of appropriately qualified and experienced personnel employed
- Evidence of relevant qualifications and experience of technical staff employed

*Note 7: Appropriate qualifications issued under the National vocational education & training system (National aerospace industry competency standards) by Australian colleges, universities and military are mostly acceptable to the Authority.*

- A description of the organisational structure, specifically indicating responsible person(s) for each of the activities sought. These are the persons responsible to the accountable manager
- Layout and description of facilities at each location, including documentary evidence of ownership, lease, rental or acceptable arrangement of premises/property or special equipment details

*Note 8: An applicant who has access to facilities such as mobile workshops etc. may also apply for a certificate of approval.*

- A documented system of quality control in accordance with subregulation 30 (2D) of CAR 1988

*Note 9: Australian Standards ISO 9000 to ISO 9004 provide guidance for the content of a system of quality control.*

- For maintenance of class A aircraft, a procedures manual in accordance with subregulation 30 (2)(c) of CAR 1988

- List of tools and equipment available to the applicant

*Note 10: This may include tools owned by the applicant's technical staff.*

- List of pertinent airworthiness data and evidence of amendment arrangements

*Note 11: Web addresses (URL) for airworthiness data are acceptable.*

- Evidence of sharing arrangements for personnel, facilities, equipment, tools and data, as applicable.

3.1.3 As part of this process a pre-application meeting may be conducted between the applicant and the Authority to discuss the application.

3.1.4 Following the pre-application meeting, the application will be allocated to a CASA Area/Airline Office and a pre-assessment meeting will be held with the applicant to discuss the assessment process.

3.1.5 The Authority charges a fee for issue of a certificate of approval. This fee is calculated on a cost recovery basis. An estimate of the chargeable fee will be provided to the applicant at the pre-assessment meeting.



## **3.2 DOCUMENTATION REVIEW PHASE**

3.2.1 In this phase the Authority will assess the documents submitted by the applicant. These documents should meet the minimum standards set by the Authority.

The following appendices describe standards acceptable to the Authority:

- |             |  |
|-------------|--|
| Appendix 1: | Premises and facilities                        |
| Appendix 2: | Personnel requirements                         |
| Appendix 3: | Tools and equipment                            |
| Appendix 4: | Airworthiness data                             |
| Appendix 5: | Documented procedures and/or procedures manual |
| Appendix 6: | Contracting                                    |
| Appendix 7: | Computerised maintenance data                  |
| Appendix 8: | Non-destructive testing                        |

## Appendix 9      Manufacture of parts during maintenance

### **3.3    INSPECTION PHASE**

3.3.1 To determine the applicant's suitability for the issue of a certificate of approval, re-issue or a change to an existing certificate, the Authority will visit the applicant's premises. This may require a number of visits.

3.3.2 During these visits the Authority will verify the information contained in the application and the supporting documents. This verification will include, but is not limited to, that:

- the applicant has in place a suitable documented system of quality control covering the scope of activities
- the applicant employs sufficient personnel to plan, perform, supervise, inspect and certify the activities to be undertaken
- the qualifications held by certifying personnel engaged in maintenance adequately cover the scope of activities to be undertaken
- the applicant's premises are of a suitable size, construction and layout for the approval being sought
- the applicant has an adequate technical library, including amendment services
- adequate procedures for procurement, acceptance/inspection of aircraft components and aircraft materials and storage thereof are in place
- adequate procedures for initial and refresher/continuation training for personnel engaged in maintenance, quality, supervision, planning, stores and technical records are in place
- the applicant has an approved system of certification
- adequate procedures to control any contracted activities are in place.

### **3.4    CERTIFICATION PHASE**

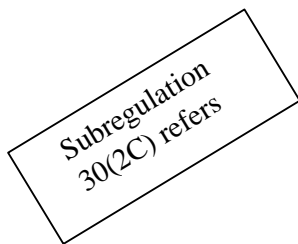
3.4.1 If the Authority is satisfied that the applicant's organisation meets the requirement of regulation 30 of CAR 1988 and it has the ability to carry out the activity applied for in a satisfactory manner, the Authority will issue a certificate of approval to the applicant.

*Note 12: An initial issue of a certificate of approval may be subject to a calendar limitation.*

#### **4. Continued validity of approval**

4.1 The Authority will subsequently confirm that the organisation complies with both its documented procedures and the regulatory requirements, by means of scheduled and special purpose audits and inspections. Frequency and depth of these audits will vary depending on:

- the size and complexity of the scope of activity being undertaken
- type of aircraft/equipment maintained by the organisation
- performance of the organisation as measured by the audit program
- stability of the organisation or any significant change to its personnel or activities.



4.2 Unless the approval has been surrendered, superseded, suspended, revoked or expired, the continued validity of approval is dependent upon the AMO remaining in compliance with the regulatory requirements.

#### **5. Limitations on the approved maintenance organisation**

5.1 The AMO may only maintain aircraft, aircraft components or aircraft materials for which it is approved when all necessary facilities, tools, equipment, aircraft materials, approved technical data and certifying staff are available.

#### **6. Privileges of the certificate of approval holder (AMO)**

6.1 An AMO can only carry out the following tasks as permitted by the approval and in accordance with the documented procedures:

- Maintain any aircraft, aircraft component or aircraft material for which it is approved at locations identified on the certificate or attached to the certificate
- Arrange for maintenance of any aircraft, aircraft component or aircraft material for which it is approved at another non-certificated organisation that is under the quality control of the certificate of approval holder. The certificate of approval holder must have a controlled list of their contractors
- Maintain any aircraft for which it is approved at any place subject to the need for such maintenance arising only from unserviceability of the aircraft
- Maintain any aircraft for which it is approved at a location identified as a line maintenance location if the certificate of approval holder's procedures and quality system both permit such an activity and list such locations

- Issue Authorised Release Certificates (ARC) or a Maintenance Release on completion of maintenance in accordance with the applicable regulations, the quality system and documented procedures.

## **7. Changes to the approved maintenance organisation**

7.1 Civil Aviation Order 100.5 requires the AMO to notify the Authority within 14 days of any of the following changes, to enable the Authority to determine continued compliance with regulation 30 of CAR 1988 and to amend the certificate, if:

- there is a change, or a proposed change, to:
  - the holder's identity
  - the holder's place of business or location where activities relating to the certificate are carried out
  - the holder's registered office address
  - the postal address to which communications may be sent
- the AMO permanently ceases to engage in any or all of the activities for which the certificate of approval was granted
- the AMO is unable, for any reason, to carry out the activities for which the certificate of approval was granted. For example, the AMO no longer has the necessary facilities, etc.

7.2 The Authority may prescribe the conditions under which the AMO may operate during such changes unless the Authority determines that the approval should be suspended.

**LIST OF APPENDIXES**

Appendix 1	Premises and facilities
Appendix 2	Personnel requirements
Appendix 3	Tools and equipment
Appendix 4	Airworthiness data
Appendix 5	Documented procedures and/or procedures manual
Appendix 6	Contracting
Appendix 7	Computerised maintenance data
Appendix 8	Non-destructive testing
Appendix 9	Manufacture of parts during maintenance

**APPENDIX 1****PREMISES AND FACILITIES****1. INTRODUCTION**

1.1 This appendix has been prepared in general terms with the aim of providing an acceptable standard for premises used for maintenance. An applicant who requires further guidance regarding suitability of premises should consult the Authority. In addition, the AMO will also need to comply with other Commonwealth, State, Territory or Local Government regulations relating to workplaces and environment.

**2. PREMISES**

2.1 The AMO's premises need to be of suitable size, construction and layout to permit the maintenance activity to be carried out.

2.2 Buildings and areas shared with other organisations or persons should have provision to ensure that each organisation's activities and administration do not interfere with those of the other.

*Note: This does not mean a fence or a white line down the centre of the hangar, just that each organisation should be able to control their activities without interfering with the activities of the other.*

2.3 To prevent contamination, the premises need to be kept in a clean and tidy condition. This should include the provision of suitable floors and may require dust locks, air-conditioning or extractor fans commensurate with the level of cleanliness required for that particular activity.

2.4 Lighting needs to be of such a standard that the quality of work is not impaired. Any special lighting requirements specified by an aircraft or component manufacturer should be observed.

2.5 Ventilation, as necessary, should be provided to ensure that the ability of the staff to carry out maintenance is not impaired and that contamination of the aircraft, components and aircraft materials do not occur.

2.6 In the case of activities such as maintenance of special aircraft materials, composite structures or sensitive components requiring application of special environmental conditions, such conditions should be observed. These special conditions are usually identified within the approved maintenance data. Where no such special conditions exist, a national or international standard should be observed. In certain cases, the Authority may also develop and promulgate these standards.

2.7 Accommodation should be provided for:

- the work to be carried out including disassembly, cleaning, inspection, re-assembly and testing

- required equipment, including hand tools, machine tools and associated benches, trays and work stands
- the administrative support of work including, the management of quality, planning, technical records and airworthiness data
- To avoid contamination or damage of aircraft, aircraft components, aircraft materials, equipment or processes, it is recommended that segregation be provided, for example:
  - machine tools
  - battery charging
  - fabric work
  - composite structure maintenance or manufacture
  - painting or spraying
  - grit or bead blasting
  - fluids
  - cleaning.

### **3. STORAGE FACILITIES**

3.1 The AMO should provide satisfactory storage for aeronautical products. There should be suitable quarantine areas for the storage of aeronautical products awaiting inspection or classified as unserviceable, bonded store, and storage for commercial products.

3.2 Incoming aeronautical products should be inspected by the AMO, on receipt, for shipping damage and correct identification. For more information refer to CAAP 42W - 1 “*Documents for the supply of aeronautical products*”.

3.3 Aeronautical products should be segregated from commercial products, correctly identified and protected from deterioration or corrosion.

3.4 The storage arrangements should provide for special facilities as necessary for proper housing of the type of aeronautical products concerned, e.g. storage of rubber items in a cool place, timber or plywood in suitable racks, refrigeration control of “prepreg” composites, shockproof storage for delicate instruments etc.

3.5 A system should be established to provide for the recording of part number, identification and incoming inspection of all aeronautical products.

3.6 The storage area should be, secure, clean, dry and well ventilated and should meet the recommendations of the product manufacturer.

3.7 All aircraft materials of an inflammable nature, such as dope, thinners, paint, etc., should be kept in an inflammable storage facility.

3.8 There should be satisfactory systems to ensure proper control of all shelf-life items.

3.9 When necessary adequate facilities should be provided for handling and storage of Electrostatic Sensitive Devices (ESD) and sensitive instruments.

*Note: The manufacturer's recommendations for the storage of specific items should be followed.*

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**APPENDIX 2****PERSONNEL REQUIREMENTS****1. INTRODUCTION**

1.1 Qualified management and technical personnel are essential to ensure effective control within the organisation and to maintain quality control and safety.

**2. APPOINTED PERSONS**

2.2 The holder of the certificate of approval will normally be the accountable manager and will have overall responsibility for the organisation. However, he or she may appoint suitably qualified and experienced employees to manage various functions of the organisation. These responsible managers will represent the technical management structure of the organisation.

2.3 Where the applicant is a body corporate the applicant will be required to nominate a person to be identified as the accountable manager. This person must have the ultimate authority, including financial authority, within the organisation. The accountable manager will ensure that all necessary resources are available to provide the services for which the organisation is certificated.

2.4 The accountable manager may appoint responsible persons as necessary. The titles and responsibilities of these responsible persons will vary from organisation to organisation depending on the size and scope of its activities. Irrespective of the title used or the number of persons appointed, the activities in the following areas should be allocated where they are applicable to the organisation:

**Aircraft maintenance activities**

- Responsibility for ensuring that all aircraft maintenance carried out by the AMO is carried out in accordance with the standards specified in the documented procedures and the regulations; and
- Responsibility for ensuring that any corrective action relating to aircraft maintenance resulting from any audit activity is fully actioned in a timely manner.

**Workshop or component maintenance activities**

- Responsibility for ensuring that all work on aircraft components is carried out in accordance with the standards specified in the documented procedures and the regulations; and
- Responsibility for ensuring that any corrective action relating to workshop or component maintenance resulting from any audit activity is fully actioned in a timely manner.

**Procurement and storage of aircraft components and aircraft materials activities**

- Responsibility for ensuring that all activities for the procurement and storage of aircraft components and aircraft materials are carried out in accordance with the standards specified in the documented procedures; and

- Responsibility for ensuring that any corrective action resulting from any audit activity is fully actioned in a timely manner.

#### **Quality activities**

- Responsibility for the monitoring and auditing of the organisation's compliance with regulatory requirements and its documented procedures; and
- Responsibility for ensuring the adequacy of the documented procedures in meeting the regulatory requirements and in reflecting the scope of the certificate; and
- Responsibility for ensuring that corrective actions in respect of any deficiencies revealed during compliance with the above paragraphs are carried out; and
- Responsibility for applying for any exemption required by the AMO and for ensuring compliance with any conditions which apply to any such exemption; and
- Responsibility for ensuring that any corrective action resulting from any audit activity is fully actioned in a timely manner.

#### **Training activities**

- Responsibility for ensuring that personnel meet the initial and ongoing training and qualification criteria defined in the documented procedures and the regulations.

#### **Personnel authorisation**

- Responsibility for authorising appropriately qualified staff for specific functions.

#### **Data and records management activities**

- Responsibility for ensuring that all necessary data is available to staff when required; and
- Responsibility for ensuring that all maintenance records are kept in accordance with the documented procedures, and that the records are retained for the required periods; and
- Responsibility for ensuring compliance with any computer control requirements where the computer is used as an aid to aircraft maintenance or certification.

#### **Liaison with the Authority**

- Responsibility for all liaisons with the Authority, including responding to the Authority for any discrepancies found during surveillance.

### **3. MAINTENANCE PERSONNEL**

#### **3.1 Staffing level**

3.1.1 An AMO must show that it has sufficient staff to complete all its planned maintenance activities. A method of achieving this would be by use of a labour-hour plan to illustrate the sufficiency of adequately qualified staff. Labour hours dedicated to the quality activities must also be considered when assessing staffing requirements.

3.1.2 In addition to the responsible persons, the applicant should have sufficient qualified employees at each location. Qualifications that meet the Australian Qualification Framework

Standard appropriate to the work being carried out are mostly acceptable to the Authority. The Authority may also accept some military qualifications.

3.1.3 If appropriately qualified contract staff are utilised, evidence of the arrangements by which the contractor will provide the services, should be evident.

## **3.2 Training of personnel**

3.2.1 Regulation 30 of CAR 1988 requires the AMO must have a system to ensure that each person employed or working under arrangement receives adequate training. This includes initial and continuation training for staff. The training is not necessarily required to lead to the issue of an AME licence or other technical qualifications. The training of staff may be carried out by the AMO, contracted to an external training body or a combination of these options.

*Note: Unqualified staff must be directly supervised by appropriately qualified staff.*

3.2.2 Continuation training should include instruction on any new aircraft types, aircraft components, equipment, materials or changes to the documented procedures.

3.2.3 It is recommended that procedures be established to assess personnel for fitness to perform their duties, including visual acuity, fatigue, alcohol and drugs, as appropriate.

*Note: For further information and guidance in this area refer to the latest Commonwealth, States, Territory or Local Government OH&S legislation.*

## **4. COMPETENCY ASSESSMENT**

4.1 Technically qualified and competent staff are necessary for ensuring the quality of work carried out thus ensuring that the AMO meets its safety obligation. The AMO's procedures for assessing the competency of staff employed should include the levels of basic training, qualifications held, and experience necessary to accomplish the various tasks. For example, to be acceptable all staff including planners, supervisors, certifying persons, and other technical and administrative staff should be assessed for competence by on-the-job evaluation, or by examination relevant to their particular role within the organisation.

4.2 It is essential that staff have an adequate knowledge of the AMO's procedures and processes, which affect their role in the organisation.

## **5. REGISTER OF APPOINTED PERSONS**

5.1 The following details of appointed persons should be entered in a register of appointed persons. If part of this information is contained in other documentation then a reference to that documentation should be included in the register:

- full name, current position or title within the organisation
- date of appointment
- business and after hours contact details
- duties and responsibilities
- qualifications
- company approvals

**APPENDIX 3****TOOLS AND EQUIPMENT**

1.1 Maintenance must be carried out in accordance with approved data (refer regulation 42V of CAR 1988). That data will identify special tools or equipment that need to be used for specific functions. This means, to comply with 42V, those tools and equipment must be used. However, alternate tools or equipment may be used if it is approved by having the approved data amended via CAR 2A(4) or CAR 42ZS. These alternatives must show equivalency to the manufacturers' standards.

An applicant for a certificate of approval for maintenance of aircraft, aircraft components or aircraft materials must show that all tools and equipment, specified in the manufacturers' technical documentation, are readily available to meet the intended scope of the certificate.

*Note: If any tool or item of equipment is rarely needed that its permanent availability is considered unnecessary, it must be shown that the tool or equipment is available when required.*

1.2 An AMO should provide sufficient access equipment, inspection platforms and, where applicable, aircraft servicing docks to properly maintain the aircraft, aircraft component or aircraft material.

1.3 An AMO should provide all the tools, equipment, including test equipment necessary to measure, calibrate, or test an aircraft, aircraft system or aircraft component it intends to maintain. Where qualified staffs use personal tools requiring calibration the AMO should include those tools in its records.

1.4 Tools and equipment should be controlled so that their location is always known. There should be a procedure to ensure that at shift changes, or when aircraft leave the organisation, all tools and equipment are accounted for.

1.5 A procedure is in place to ensure serviceability of all tools and equipment used by the organisation and its staff.

1.6 A procedure is in place to ensure that use of alternate tools and equipment is approved. A clear system of identification for all such tools and equipment should be provided.

1.7 A procedure is in place to ensure that all tools and equipment requiring calibration are calibrated. There must be a means of indicating to users when the next inspection, service or calibration is due. The identification method should also have a means to show whether the item is unserviceable for any reason, which may not be obvious to the user.

1.8 A register and a record of calibrations must be maintained for all tools and equipment requiring calibration. Inspection, service or calibration periods should be as recommended by the equipment manufacturer except where an organisation can show, by statistical means, that a different period is appropriate in particular circumstances.

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**APPENDIX 4****AIRWORTHINESS DATA****1. GENERAL**

1.1 An organisation must hold or have access to copies of all relevant airworthiness data necessary to maintain the types of aircraft or aircraft equipment for which it is approved. This should include applicable data issued by the Authority, any other relevant National Airworthiness Authority, the Type Certificate holder, Supplemental Type Certificate holders, CAR 35 authorised persons, or other applicable Approved Organisations (for example, APMA, ATSOA).

1.2 Airworthiness information may be available through various sources, including ownership, leasing, sharing arrangements, access through web address (URL), or supplied by another person (i.e an aircraft owner). Where information is subject to any loan agreement evidence of the arrangement that gives the AMO access to such information must be available.

1.3 An organisation should provide, to its maintenance staff, all relevant airworthiness data required to carry out their activities. The data should be readily available to staff. When computer or electronic viewing systems are used, the number of terminals should be adequate for the number of staff required using the systems.

1.4 Examples of airworthiness data that should be held or accessed through URL are:

- *Civil Aviation Act 1988*
- *Civil Aviation Regulations 1988*
- *Civil Aviation Regulations 1998*
- Civil Aviation Orders
- Civil Aviation Advisory Publications, as appropriate
- Airworthiness Bulletins
- Airworthiness Directives
- Type Certificate Data Sheets
- Manufacturers' Maintenance Manuals
- Repair Manuals
- Overhaul Manuals
- Illustrated Parts Catalogues
- Supplementary Structural Inspection Manuals
- Service Bulletins
- Aircraft Maintenance Programs
- Non-Destructive Testing and other specialised process manuals.

**2. AMENDMENTS TO AIRWORTHINESS DATA**

2.1 There should be a procedure to control the amendment and distribution of the controlled and where appropriate uncontrolled data. Where an amendment service is available it should be subscribed to, and the associated procedure should ensure that all amendments are received, assessed and incorporated as necessary.

**Appendix 5****DOCUMENTED PROCEDURES AND/OR PROCEDURES MANUAL****1. GENERAL**

1.1 This appendix is intended to cover a range of size and complexity of organisations, and number and size of aircraft or aircraft components that may be maintained.

1.2 The applicant for a certificate of approval is required by regulation 30 of CAR 1988 to produce a documented system of quality control and/or a procedures manual. For the maintenance of a class A aircraft a procedures manual is required. These should be acceptable to the Authority. They should contain the quality control procedures the organisation has in place to ensure all work carried out is in compliance with the regulatory requirements. If contained within a manual or manuals, the organisation may include any additional information in relation to the organisation's maintenance activities.

1.3 Provided the documented procedures or procedures manual is identified as that required by regulation 30 of CAR 1988:

- the documented procedures or the manual may be titled as the certificate holder desires; and
- if the certificate holder is also the operator of the aircraft this manual may be combined with the maintenance control manual.

1.4 The AMO is to ensure that all persons involved in the maintenance of aircraft, or those having need to be aware of the contents, have access to those parts of the manual or documented procedures, including the latest amendments, appropriate to that person's responsibilities or needs. A copy of the manual, appropriate parts of the manual or documented procedures is to be provided for each location and, as a condition placed on the certificate, the Authority unless alternative arrangements have been agreed with the Authority.

1.5 The documented procedures or procedures manual should provide clear guidance to personnel on:

- a general description of the scope of work authorised under the certificate of approval
- how the activities included in the CASA approval are managed
- how the work is carried out
- their personal responsibilities
- how compliance with the appropriate continuing airworthiness requirements is achieved.

1.6 Each page of the documented procedures or manual should be identified with:

- the organisation name
- the original or revision date, as appropriate
- the section and page number.

## **2. PROCEDURES MANUAL**

2.1 Where a procedures manual is developed the manual should also identify:

- the manual title
- the name of the organisation
- the certificate of approval number
- the physical address of the organisation
- the manual control number
- the holder of the copy of the manual.

### **2.2 Control of procedures manual**

2.2.1 The Manual Control Section should contain procedures to control the original issue of the manual and subsequent revisions. This part of the manual includes:

#### **A Table of Contents**

- This part should show each subject and its specific location within the manual.

#### **A List of Effective Pages**

- This list is used to control the revision of each page in the manual. Each page of the manual should be listed with the original or current revision date, as appropriate. The list of effective pages should be revised at each revision.

#### **A Record of Revision page**

- This page should be used to record each revision when it is placed in the manual. It should have provision for recording the revision number, date inserted and details of the person making the revision.

### **2.3. Introduction section**

2.3.1 The Introduction Section should explain:

- purpose of the manual, including scope of work
- general statement on the contents of the manual
- who has responsibility for the manual and how that is managed
- the AMO's philosophy regarding the operation of the organisation (corporate commitment by the Accountable Manager)
- that all personnel are required to follow procedures contained in the manual
- administrative procedures, including:
  - notification to the Authority of any change that will effect the approval, including:
    - ◇ the holder's identity
    - ◇ the holder's place of business or location where activities relating to the certificate are carried out
    - ◇ the holder's registered office address
    - ◇ the postal address to which communications may be sent
  - application for variations to the certificate.

### **3. REVISING DOCUMENTED PROCEDURES OR PROCEDURES MANUAL**

3.1 The AMO's system for revising procedures should include the following:

- submitting to the Authority for review all those revisions requiring prior acceptance, before distribution
- distributing revisions, including the identification of the person responsible for distributing the revisions and steps to ensure each manual holder receives each revision
- the identification of each particular revision in the text of each page. This may be by a vertical bar or other method; and
- maintaining a distribution list . This can be controlled by name and/or position.

### **4. REGISTER OF LOCATIONS**

4.1 This register should contain the details of all permanent locations where approved activities are normally performed and a general description of the facilities at each location. The details should include the address and telephone number of the locations and the specific activities performed at those locations.

4.2 The register should include or identify the procedures to be followed to control any maintenance activities carried out away from a permanent location.

### **5. MANAGEMENT AND PERSONNEL**

This section should describe the personnel structure of the organisation and the related duties and responsibilities of the management, key supervisory and certifying personnel and should include:

#### **5.1 Organisational chart**

An organisation chart showing:

- the management structure of the organisation
- the title of all supervisory and certifying personnel, if appropriate, explaining the chain of responsibility
- the separation between maintenance and quality department.

#### **5.2 Register of appointed persons**

5.2.1 The Accountable Manager may appoint certain qualified staff to perform or control various functions within the organisation e.g. Stores Manager, Chief Engineer, etc.

5.2.2 This register should detail all persons appointed by the Accountable Manager to be responsible for all or any of the functions specified in Appendix 2 of this publication. The following details of the appointed persons should be recorded in this register:

- name or position of the appointee
- date of the appointment
- contact information of the appointee

- location of the appointment; and
- responsibilities of the appointee.

5.2.3 Where any of the information listed above is held in other records there need only be a reference to those records.

### **5.3 AMO appointed persons**

5.3.1 The procedures for designating and controlling the AMO's appointed persons should be established and should include:

- the method of recording scope and limitations of the authorisations issued
- the method of notifying each authorised person of the scope of their authorisation
- the method of determining the minimum experience, training and competency requirements for authorised persons
- the method of recording the experience and training of authorised persons
- the method of identifying each authorised person by:
  - the name
  - AMO authorisation number
  - the type of licence(s) held, if applicable
  - licence(s) number
  - signature, initials or stamp
  - the privileges and limitations of each authorisation;
- a procedure for ensuring the duties and responsibilities of supervisory and certifying personnel are taken over by others in their absence.

## **6. QUALITY SYSTEM**

6.1 The quality system should detail the AMO's quality control activities and should contain:

- a clear definition of the level of quality the organisation intends to achieve
- a procedure that sets out the level and frequency of the internal reviews
- a procedure to ensure that audits are conducted by personnel independent from the particular maintenance activity
- a procedure to ensure that personnel conducting audits are appropriately qualified and competent
- a procedure to record the findings and communicate them to the management
- a list of responsible persons for quality activities
- procedures for monitoring the other quality indicators such as facility malfunction reports, incidents, occurrences, maintenance errors, complaints and defects
- a procedures for management analysis and overview
- a procedure for rectifying any deficiencies which may be found; and
- procedures for documenting the complete review process from the inspection to the satisfactory management review so that this is available to the Authority during a safety audit.

6.2 The procedures should ensure that checks are carried out, as applicable, on the AMO's activities, including, but not limited to:

- aircraft or aircraft components whilst undergoing maintenance
- the adequacy of facilities and staff
- the adequacy of defect rectifications, and maintenance release (technical logs) for deferred defects and repetitive defect control
- the stores receipt procedures, shelf-life and storage conditions
- the accuracy and control of worksheets or cards, to ensure that these adequately reflect the requirements of the approved maintenance program
- the accuracy and completeness of technical records, and on confirmation that certifications have been made by person holding the required authority
- procedures for defect reporting, the technical assessment of incidents and accidents, and co-ordination with the operator
- amendment standards and amendment procedures of technical publications
- test equipment, for periodic calibration check records and storage
- hangar and ramp equipment, for cleanliness, state of repair, correct functioning and maintenance of mobile units, such as ground power units
- the AMO's procedures, for effectiveness and compliance with the regulatory requirements, including Airworthiness Directive compliance and major defect reporting
- storage conditions, records and inspection control at the premises of stock holders and contractors (where applicable)
- procedures for the control of contractors
- the procedures for liaison with the Authority on matters governing airworthiness.

## **7. MAINTENANCE PROCEDURES**

7.1 These procedures should describe the system for controlling and documenting work in progress and must contain all other information necessary to ensure that the completed work meets all airworthiness requirements.

7.2 The information is normally contained within work packages identifying the maintenance tasks required to be carried out on the aircraft or aircraft components. These work packages may be supplied by a AOC holder or internally developed.

### **7.2 Control of work packages**

7.2.1 The AMO should have systems to ensure the control of work packages, including the raising, completing and retaining functions of those packages.

7.2.2 The work package and associated procedures should provide means of documenting all work associated with the maintenance activities (technical record control).

7.2.3 The completed work package should contain details of all work carried out and all additional documentation and should include copies of all tags and forms issued to the customer.

7.2.4 The AMO's maintenance record system should contain procedures and documentation for the following:

- the responsibility and instructions for controlling the work package and any associated internal documents
- the sequential numbering or other positive control of documentation
- ensuring any work cards raised by the AMO include the following information:
  - identification of persons responsible for ensuring complete and correct inspections
  - identification of persons responsible for ensuring that all work is performed in accordance with the current manufacturer's technical specifications or other approved data
  - what is to be inspected
  - identification of where on the aircraft or components the inspection is to be carried out; and
  - how the inspection is to be carried out including instructions for:
    - ◇ the documentation of each inspection
    - ◇ special testing requirements
    - ◇ component and appliance calibration and
    - ◇ the recording of all defects and corrective action taken
- the AMO's identification including:
  - name, as on the certificate
  - CASA certificate number
- the customer's name and address
- the aircraft's identification to include:
  - aircraft manufacturer;
  - aircraft model
  - serial number; and
  - registration marking
- the aircraft component's identification to include:
  - manufacturer name
  - manufacturer model
  - component name
  - part number; and
  - serial number if applicable
- any technical data or reference to the data required to perform the tasks
- a method to record a detailed description of the work carried out including a record of all inspections. The following is the type of information that should be included in the work record, if applicable:
  - a record of Airworthiness Directive (AD) compliance
  - a record of repairs and modifications
  - identification of the scheduled aircraft inspection
  - a record of specialised tests, inspections, processing and calibration, such as non-destructive testing (NDT), special plating and radio instrument

- calibrations that includes the identification of any process specification used to carry out any special task:
- details of all components changed including:
    - ◇ part number
    - ◇ serial number
    - ◇ Authorised Release Certificate details
    - ◇ Any other relevant information such as TSO, TSN etc.
  - a record of:
    - ◇ the person doing the work
    - ◇ the person signing for the work, including licence number, if applicable
    - ◇ the date of the work completed
  - control and accountability of all additional related paperwork including:
    - internal company workshop orders (routing documents)
    - workshop work sheets and work cards
    - special test reports
    - calibration reports
    - defect and corrective action forms
    - authorised release certificates and release notes
    - special NDT and plating processes etc.
  - issue of a maintenance release or ARC, including when and the conditions under which a release may be issued
  - providing, to the customer, owner, or operator, as applicable, a record, of all work carried out, including the following documents, as required:
    - the maintenance release or ARCs
    - a record of all maintenance performed including repairs and modifications
    - the original or a copy of all authorised release certificates and release notes for aeronautical products repaired or overhauled outside the AMO
    - documentation of all life limited parts showing history and source of parts
    - documentation of all special tests, such as engine test after overhaul, altimeter calibration or any other calibrations, etc.
    - a record of all replacement parts
  - ensuring that the computer maintenance record systems meet the airworthiness requirements
  - retention of records by the certificate of approval holder.

## **8. ADDITIONAL MAINTENANCE PROCEDURES**

### **8.1 In-progress maintenance**

8.1.1 There should be a system or method for inspection, testing and calibration, during and after disassembly and at various stages while the work is in progress. The system should also ensure continuity of maintenance during shift changeovers at various stages of work.

## 8.2 Final inspection

8.2.1 Final inspection procedures should include identification of:

- the qualified person designated to inspect and certify the work carried out
- the method of co-ordination of the maintenance and certification for all work
- major repair and modification release requirements
- the final check of completion of the maintenance work package.

## 9. CERTIFICATION PROCEDURES

### 9.1 Aircraft maintenance

9.1.1 A description of the AMO's system of completion of maintenance, including the requirements for signing and issuing the Maintenance Release. This could be Schedule 6 to CAR 1988 or a CASA approved alternative.

### 9.2 Component maintenance

9.2.1 A description of the AMO's system of completion of maintenance. Including requirements for signing and issuing the Authorised Release Certificate (ARC). For further information refer to CAAP 42W-2 "*Authorised Release Certificate*".

## 10. MAJOR REPAIR AND MODIFICATION PROCEDURES FOR AIRCRAFT AND AIRCRAFT COMPONENTS

10.1 These procedures should contain information to enable the AMO's staff to:

- recognise major or minor repairs
- recognise major or minor modifications
- recognise sources of approved data including:
  - Australian ADs
  - manufacturers' service bulletins or service letters identified as approved by the certifying NAAs
  - structural repair manuals and other manufacturers' manuals
  - data identified as approved by an approved Design Organisation
  - component manufacturers' manuals and instructions
  - Type Certificates (TC) and Supplemental Type Certificates (STC)
  - data approved by a CAR 35 authorised person
- apply for the approval of data to the Authority or an authorised person
- complete documentation requirements for major repairs and modifications to aircraft and aircraft components including:
  - major repair and modification form 337
  - AMO work orders including:
    - ◇ applicable release document, such as ARCs
    - ◇ a detailed description of the work performed with reference to the approved data

- ◇ a record of parts used, with appropriate documentation showing the source of the parts, including where necessary, TSO, TSN etc.
- ◇ the date when the work was completed
- ◇ the signature, name and identification number of person who carried out the work
- identify documentation required to ensure that all the AMO engineering authorisations and deviations from standards are supported by approved data; and
- accomplish the distribution and retention of records.

## 11. HANDLING OF PARTS UNDERGOING MAINTENANCE

11.1 These procedures should describe the AMO's system for handling parts undergoing maintenance. The system and procedures should cover:

- the identification and segregation of parts including:
  - a tag identification system for:
    - ◇ serviceable parts
    - ◇ unserviceable parts
    - ◇ repairable parts
    - ◇ condemned or scrap parts
    - ◇ general identification
  - confirmation that all parts will always be properly tagged and identified; and
  - the identification of parts and details of the associated documentation on the tag
- the control of parts including:
  - parts issued to a job
  - ensuring segregation requirements are maintained during various stages of maintenance including:
    - ◇ disassembly and assembly
    - ◇ cleaning, inspection, repair and modification
    - ◇ storage awaiting further work
    - ◇ part's finishing, including painting
- the storage facilities and parts identification for:
  - standard aircraft parts
  - quarantine parts
  - customer parts
  - parts used for test purposes
  - parts used as special tools
  - salvaged parts
- the preservation of parts
- the control of shelf-lived items to include:
  - inspection and control
  - special storage
  - special labelling
  - climate and environmental control

- the control of life limited parts; and
- overall stock control.

## 12. CONTROL OF TECHNICAL DATA

12.1 These procedures should describe the AMO's procedures for maintaining and distributing all technical data including the AMO's manuals, drawings, engineering orders, shop work sheets and other documents held by the organisation.

- There should be procedures for control of all technical data including procedures to ensure:
  - distribution of the latest version throughout the organisation
  - availability to staff
  - amendment procedure
  - revision status control
  - segregation of controlled and uncontrolled data
- There should be procedures for ensuring that the translation of all foreign technical data is timely and accurate, including:
  - who performs translations
  - the quality control of translations to ensure they are accurate and complete
  - final approval of translations
  - ensuring that translations are maintained in a current condition when manufacturers' manuals instructions are revised.

## 13. CALIBRATION OF PRECISION TEST EQUIPMENT

13.1 These procedures should explain the AMO's system for controlling and performing calibration of precision test equipment. The AMO is responsible for the calibration program whether calibration is carried out in-house or is contracted to outside agencies. The procedures should include:

- calibration of equipment at regular intervals in accordance with the appropriate:
  - manufacturers' recommendations; or
  - recognised industry's standard practices
- the methods by which precision test equipment calibration status is recorded and adhered to, including:
  - the procedures for ensuring equipment is removed from service and calibrated when due
  - ensuring the proper disposition of calibration records, including:
    - ◇ the person responsible
    - ◇ where the records are maintained
  - ensuring that calibration records include, as appropriate:
    - ◇ the manufacturer's name
    - ◇ equipment make and model number
    - ◇ the original or AMO assigned serial number
    - ◇ the date of last calibration or test
    - ◇ the method used for calibration

- ◇ the frequency, interval of calibration or test
- ◇ the results and corrections of calibration or test
- ◇ the date on which the next calibration or test due
- the tagging and labelling of test equipment, showing, as appropriate:
  - ◇ the current calibration date and next calibration due date
  - ◇ if equipment is out-of-calibration, or unserviceable
  - ◇ if subject to limited calibration, with limitation clearly identified on each piece of equipment
  - ◇ correction cards issued, as required
- the procedures for the acceptance of new precision test equipment into the inventory of the AMO, including:
  - ◇ the determination of calibration status or calibration before placing in service
  - ◇ the initiation of calibration records, and tagging or labelling of equipment
- the control of calibration of precision test equipment performed by a contracted calibration organisation, including:
  - procedures for establishing that the contracted organisation can perform calibration to the required tolerances and to an acceptable national standards
  - procedures for determining that the calibration organisation's personnel are trained and qualified
  - procedures for ensuring that the organisation has access to manuals for specific test equipment to be calibrated
  - procedures for ensuring that necessary equipment recommended by the manufacturer, or its equivalent, is available
  - procedures for ensuring that calibration records are maintained by the AMO
- procedures for calibration carried out by the AMO's personnel, including:
  - procedure for retention of master test equipment records and their traceability to acceptable national standard
  - procedure for ensuring that personnel conducting calibration are trained and qualified to perform the task
  - procedure for ensuring availability and currency of the relevant manual(s), for specific test equipment calibrated
  - procedure for ensuring availability of manufacturer required test equipment, or equivalent
  - procedure for retention of calibration records by the AMO.

#### **14. HANDLING AND STORAGE OF AIRCRAFT PARTS**

14.1 These procedures should describe the AMO's procedures for the acceptance, inspection, identification, tagging, storage and issue of each aircraft part. It should also describe the procedures to properly evaluate each supplier and should include:

- procedures for receiving parts, including:
  - the title of person who is authorised to inspect each item
  - where and when the inspection takes place

- how and on what form(s) the inspection is recorded
- the disposition and retention of each recorded inspection
- inclusion in to inventory (i.e. GRN)
- the disposition and action taken on each item when it fails inspection, including:
  - ◇ the control, segregation and quarantine of each item
  - ◇ the further investigation as necessary
  - ◇ the procedures for reporting suspected unapproved parts to the Authority
- procedures for the inspection of new parts and aircraft materials for:
  - shipping damage
  - traceability of life limits, if applicable
  - identification and tagging of parts to manufacturers' invoices
  - special handling and storage instructions for items such as composite aircraft materials, paints, adhesives and other similar aircraft materials; and
  - to ensure that proper documentation is available for determining the authenticity of that part
- procedures to inspect overhauled or repaired parts from CASA approved organisations for:
  - shipping damage
  - traceability of life limits, if applicable
  - traceability of overhaul record and airworthiness release tag.
- procedures to inspect items sent out for contracted maintenance for:
  - shipping damage; and
  - conformity to specifications, including type of aircraft materials and state of preservation
- procedures to inspect items of unknown origin for:
  - conformity to specifications, to include type of aircraft materials and state of preservation
  - airworthiness status including Airworthiness Directive compliance and traceability of life limits, if applicable; and
  - functional tests.
- procedures for the storage of repaired parts, should include:
  - identification and tagging
  - shelf life limits
  - protection of parts from dust, moisture and other contaminants; and
  - climate control as necessary
  - procedures for inspection, control and identification of items maintained by contract maintenance facilities
- procedures to ensure, throughout the organisation, that only approved and authentic parts are used on Australian aircraft and components. Procedures should address or consider the following:
  - incoming inspection of parts
  - installation of parts by appropriately qualified maintenance personnel

- procedures to ensure that each item meets all current Airworthiness Directive requirements
- procedures for ensuring that proper documentation of CASA approved parts is included in work-order package and that appropriate documentation is given to the customer
- method of identifying and reporting suspected unapproved parts to the Authority.

## **15. CONTRACTING**

15.1 The procedures for the control of contractors should consider the following:

- An assessment of the contractor's compliance with the regulatory requirements to the extent that the AMO will use the contractor. This should include audits of the contractor
- The audit of the AMO's contracting activities.
- Where the contractor does not meet the regulatory requirements, the AMO should ensure corrective action are taken prior to commencement of work
  
- The control of contractors, including recording audits of the contractors by the AMO, corrective action follow-up plan and to record when contractors are used.
- The use of tools, equipment and personnel from the contractor as long as such tools, equipment and personnel are acceptable to the AMO's quality system
  
- Where the contractor is permitted by the AMO to use its own paperwork, maintenance instructions, aircraft materials and spares parts:
  - the product should be fully inspected on receipt, and the release documentation to be issued by the certifying staff of the AMO.
  - if the product cannot be inspected on receipt, procedures for inspection during maintenance at the contractor's facility should be established and the release documentation to be issued by the certifying staff of the AMO.

## **16. MANUFACTURE OF PARTS DURING MAINTENANCE**

16.1 These procedures should, where the AMO has facilities, equipment and qualified staff, describe the AMO's procedures for the manufacture of aircraft parts during the course of maintenance. The procedure should ensure that:

- such aircraft component must not be sold or distributed
- the installation and manufacture of such aircraft parts must remain in the control of the AMO carrying out the maintenance
- the aircraft parts produced must have no detrimental affect on the airworthiness of the aircraft or aircraft component
- the aircraft parts produced are necessary for the maintenance of the aircraft or aircraft component being worked on
- the manufacture is carried out in accordance with relevant approved data
- the AMO's system of quality control provides for methods, procedures and controls insofar as they are applicable to the aircraft parts being manufactured

- the manufactured parts are identified as being made by the AMO. For example, original manufacturer's part number plus the AMO's identification or certificate of approval number
- the AMO keeps records of the aircraft parts manufactured and provides copies of those records to the customer
- the Certificate of Registration holder is made aware of the impact of these parts with regard to the continued airworthiness and any effect on the maintenance program.

## **17. DEFECT REPORTS**

17.1 These procedures should describe the AMO's procedures for handling aircraft defects, including:

- the identification of a major defect or recurring unairworthy condition; and
- the reporting requirements to the Certificate of Registration holder and to the Authority.

*Note: For further information on defect reporting refer to CAAP 51-1 "Defect reports"*

## **18. MAINTENANCE FORMS**

18.1 These procedures should provide detailed instructions to the AMO's staff for the use of maintenance forms and should contain:

- a collection of samples of all relevant inspection forms, tags and labels in use by the AMO
  - a description of the method to execute each form, tag and label, including:
    - the purpose of each item
    - the procedure for its use
    - instructions to complete each item
    - the disposition of each item
    - reference to detailed checklists and other shop inspection forms with procedures to ensure their currency and proper disposition.
-

**APPENDIX 6****CONTRACTING****1. INTRODUCTION**

1.1 This appendix provides guidance on acceptable means of complying with the requirements of regulation 30 of CAR 1988 when work is carried out for the AMO by a contracted organisation not certificated in accordance with regulation 30 of CAR 1988. For example, specialist welding, specialised plating, specialised machining, painting or other specialised tasks. This work is considered to be an extension of the work carried out by the AMO and under the control of its quality system. The responsibility for providing the necessary documentation for all maintenance carried out and authorisation of staff certifying that maintenance rests with the contracting AMO.

**2. GENERAL CONDITIONS**

2.1 The following general conditions apply for contracted maintenance:

- When contracted maintenance is carried out, the AMO's quality system is considered extended to include the contractor for that maintenance. Those parts of the contractor's facilities, personnel, and procedures, involved with an AMO's product, must meet requirements of regulation 30 of CAR 1988 for that time
  - Any AMO may contract maintenance to a non-certificated organisation provided that there is provision in its documented procedures for such contracting
  - An AMO does not need to have its own facilities to carry out all maintenance that it wishes to contract. It does need to have its own expertise to confirm that the contractor meets the necessary standards and that any maintenance can be carried out to the approved maintenance data
  - An AMO is responsible for all maintenance carried out by its contractors. Where an AMO fails to control a contractor it may put at risk part or all of its certificate of approval
  - The extent of contracting is only limited by the expertise and documented procedures of the AMO
  - The AMO should have procedures to control all contracted activities.
-

**APPENDIX 7****COMPUTERISED MAINTENANCE RECORDS****1. GENERAL**

1.1 This appendix gives guidance on the use of computerised maintenance record systems. It provides information on the matters to be considered when writing procedures for the use and control of computer maintenance records and to maintain the integrity of maintenance records when computers are used to record information.

1.2 The following should be considered when developing a computerised maintenance record system.

**2 DATA LOSS**

2.1 To avoid data loss in the case of power interruptions the computer system must be protected by design features, which can recover data lost by such power interruptions. The design features may be hardware (for example uninterruptible power supplies), software or may be part of procedures for use.

2.2 Software procedures should be documented to make allowance for the effects of power surges and complete shutdowns. Some re-entry of data may be allowed in the recovery procedures.

**3. UNAUTHORISED ACCESS**

3.1 The data contained within the system should be protected from unauthorised access. This system should prevent unauthorised access to the database software and the computer hardware or both. The software security system should record and report unauthorised access or attempts at access. Such recording would normally be software based but it may be a procedural item for the users. The security system may be physical security where an individual computer is used which can be locked away.

**4. AUDIT TRAIL**

4.1 The database should incorporate an audit trail, which records all program and data manipulation. Where an audit trail facility is not built-in the procedures should include instructions to maintain data integrity.

**5. RECORD RETENTION**

5.1 Copies of all data records should be retained at a secure location for the period equal to a paper based system.

## **6. DATA VERIFICATION**

6.1 The process of entering data should be verifiable against the original record. Such verification could be as simple as the operator being able, and required to validate the screen image or as complex as independent quality control procedures. The verification procedures should be stricter for larger systems.

## **7. SYSTEM OPERATIONAL MANUAL**

7.1 A system operational manual should be made available to all persons authorised to operate the system. The manual should nominate the person within the organisation who has responsibility for the management of the computer system. The manual should have a technical reference to the hardware and the software and detailed operating procedures, based on daily operations, for every keyboard operation or other input. The manual should detail and standardise all abbreviations and acronyms used.

## **8. HISTORIC RECORD**

8.1 The system should include provision for the recording of amendments. This historic record should, upon retrieval, provide a complete chronological history of the maintenance and recording. Failing that, a backup of the operating system and the data is to be made and held for the required life of the associated recorded data.

## **9. BACKUP**

9.1 A backup disk or tape of the data should be produced, as a minimum, once every day that the system is operated. Those systems, which record every keystroke, may be able to justify a lesser backup frequency. When changes to the operating system software are made, the old system backup is to be kept for the life of the recorded data that was associated with that operating system.

9.2 The backup disk or tape should be stored in a secure location remote from the system installation. Access to the backup should be controlled. It is recommended that the data be backed up daily and held for 14 days. The backup for each of the thirteen days can then be overwritten in order. The backup for the fourteenth day is kept for at least 2 weeks before reuse.

## **10. COMPUTERISED WORK CARDS**

10.1 Work cards produced by the system should:

- identify the level of authorisation required for certification purposes;
- be identified and controlled individually; and
- be controlled and accounted for by the end of the maintenance activity.

## **11. TESTING PERIOD**

11.1 The normal testing period for a new computer system will depend on the complexity of the system. During the testing period the traditional hard copy documentation should be maintained concurrent with the computer system.

11.2 A register should be established containing a list of all:

- problems;
- subsequent actions; and
- solutions encountered during the life of the computer system. During the testing period the entries in the register should be used to evaluate the validity of the predetermined end of the testing date.

## **12. ELECTRONIC SIGNATURES**

12.1 Before the introduction of The Electronic Transaction Act 2002 permitting the use of electronic signatures, a handwritten signature was the primary means by which an individual could comply with the requirement for a signature on any required record, record entry, or document. Although an electronic signature may be essentially a new form of signature, its purpose is identical to that of a handwritten signature or any other form of signature currently accepted by the Authority.

12.2 An electronic signature may be in the form of a digital signature, a digitised image of a paper signature, a typed notation, an electronic code, or any other unique form of individual identification that can be used as a means of authenticating a record, record entry, or document.

12.3 The scope of information being attested to via a electronic signature should be made clear to the signatory and to subsequent readers of the record, record entry, or document. It is therefore important to clearly delineate the specific sections of a record. In addition, the system should notify the signatory that the signature has been affixed.

12.4 The security of an individual's handwritten signature is maintained by ensuring it is difficult for another person to duplicate or alter it. An electronic signature should maintain an equivalent level of security. Due to the reproduction capability inherent in an electronic system, an electronic system used to produce a signature should restrict the ability of any person to cause another individual's signature to be affixed to record, record entry, or document. The signatory must also know who else holds the privilege for access to the electronic authentication key.

12.5 An electronic signature should provide positive traceability to the individual who signed a record, record entry, or any other document.

12.6 Organisations intending to use electronic signatures should consult the Authority before implementing an electronic signature system. A written description of how electronic signatures will be used in maintenance or other activities should be submitted for the Authorities review.

**APPENDIX 8****NON-DESTRUCTIVE TESTING****1 GENERAL**

1.1 In addition to the requirements specified in the body of this publication, this appendix outlines guidelines for the applicant for a certificate of approval to engage in maintenance that requires the use of non-destructive testing methods.

*Note: The carrying out of a liquid penetrant inspection by an LAME using aerosol packed aircraft materials is not covered in this appendix.*

**2 DEFINITIONS**

*NDT* means non-destructive testing.

*NDT method* means a method of inspection covered by this appendix, including the following:

- Radiographic, all inspection techniques utilizing penetrating radiation, e.g. X, gamma and neutron radiography
- Ultrasonic, all inspection techniques utilising stress waves, e.g. acoustic emission and techniques using ultrasonic frequencies
- Eddy current, all inspection techniques utilizing electromagnetic phenomena but excludes magnetic particle methods
- Magnetic particle, all inspection techniques utilizing the migration of particles to flux leakage fields, e.g. magnetic rubber techniques
- Liquid penetrant, all inspection techniques utilising penetrating liquids.

*NDT technique* means a particular way in which a method may be used, e.g. through transmission ultrasonic as distinct from pulse-echo ultrasonic.

*NDT procedure* means a detailed written description of the way in which a particular component is to be inspected.

**3 ORGANISATIONS**

3.1 All AMOs that carry out NDT during the course of maintenance must have procedures in place that ensure that the NDT activities are carried out to Australian national standards and meet all the other applicable regulatory and/or statutory requirements.

3.2 AMOs that have systems to internally authorise their own staff for the purpose carrying out NDT have additional requirements to those that use holders of Airworthiness Authorities to carry out the maintenance.

3.3 There is a difference between the requirements for carrying out NDT on aircraft to carrying it out on components. When NDT is carried out in a component workshop, the person who physically performs the NDT signs for the maintenance task. When maintenance is carried out on an aircraft the person who physically performs the NDT signs for the

maintenance task and an LAME must review the reports and make airworthiness determinations as required and certify to the requirements in the system of maintenance.

#### 4. PERSONNEL

4.1 AMOs who carry out NDT must have adequate number of authorised staff, employed or contracted, to physically carry out the work.

4.2 For component maintenance the staff must be authorised under regulation 42ZC(6) of CAR 1988.

4.3 For aircraft maintenance these persons can be authorized:

- under regulation 33B of CAR 1988 (Airworthiness Authority); or
- subregulation 42ZC (6) or (7) of CAR 1988

*Note: The authorisations under 42ZC(7) above may be issued by an employee of the AMO with a delegation from CASA.*

#### 5 WORK PROCEDURES

5.1 AMOs should specifically in respect to NDT have written procedures, to cover the following:

- Procedures for record keepings, that include ensuring the traceability of inspection results test and recordings and radiographs;
- Records of inspection personnel training, qualifications, experience, and visual acuity testing; and
- Procedures for check viewing of radiographs on a sampling basis.

5.2 AMOs that wish to internally authorise their staff to carry out NDT are required to employ a person who holds a delegation under subregulation 42ZC(6) of CAR 1988 and have written procedures that include the following:

- the appointment of a person by the AMO to control NDT (NDT Controller); and
- to ensure that the AMO's NDT controller has the qualifications and experience to be accepted by the Australian Aerospace Non-destructive Testing Committee as NDT Level 3 person, within the meaning of Australian Standard 3669 and is responsible for the following:
  - establishing NDT acceptance and rejection criteria
  - maintaining NDT records
  - approving the AMO's NDT training, assessment, and examination of persons permitted to carry out NDT
  - maintaining records of training and experience for NDT persons
  - setting up and testing NDT test equipment
  - interpreting test results; and
  - internal surveillance of NDT tasks.
- the AMO authorises persons to perform specific NDT tasks who:
  - are recommend by the NDT controller for the task

- have completed a training program that has been checked by the NDT controller as meeting the requirements for the task. This must be as a minimum to NDT Level 1 course as described in Australian Standard 3669
  - have been assessed as being competent to carry out the specific tasks by the NDT Controller; and
  - have passed an annual visual acuity test.
- the persons approved by the AMO to perform and certify the results of the NDT tasks are:
  - authorised in writing, under regulation 42ZC(6) of CAR 1988, to carry out the maintenance; and
  - only responsible for performing specific tests on nominated parts, in accordance with defined processes and procedures that have unambiguous acceptance and rejection criteria.

## **6. RECORDING OF NDT TEST RESULTS**

6.1 The person fitting the component or aircraft materials to a higher assembly or an aircraft must be aware of the extent and results of NDT testing carried out. In addition to normal AMO's recording requirements, the following information should be provided:

- the NDT method and procedures used
- approved data relating to the test, including any applicable Airworthiness Directives
- results of the test; and
- name and identifying number of the person who certified for the NDT.

## **7. VISUAL ACUITY**

7.1 Persons who physically carry out NDT inspections must ensure that they have appropriate visual acuity to carry out any particular NDT task.

7.2 An acceptable level of visual acuity for NDT is indicated by the person's ability to read the Jaeger No. 1 letters of a standard Jaeger Test Chart at a distance of not less than 30 cm with at least one eye, either corrected or uncorrected, or an equivalent standard established by an optometrist. This test should be carried out at least annually.

7.3 The visual acuity test should normally be conducted by an optometrist or other trained person. However, a CASA Airworthiness Inspector may conduct this test.

7.4 If the person is required to wear spectacles or other optical aids it must be endorsed on the NDT authorisation and the person must be advised that they may only make inspections while wearing the spectacles or other optical aids.

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**APPENDIX 9****MANUFACTURE OF PARTS DURING MAINTENANCE****1. INTRODUCTION**

1.1 Maintenance organisations approved under regulation 30 of CAR 1988 often need to be able to manufacture aircraft parts (eg hoses, brackets, cables etc) during the course of maintenance of a particular aircraft or aircraft component. However, such manufacturing activity by an AMO is limited to a specific need at a particular time rather than to the production of aircraft parts for commercial reasons. When an AMO is maintaining a fleet of aircraft, it is acceptable to manufacture and stock parts of known need.

1.2 This appendix gives guidance to an AMO when controlling the manufacture of aircraft parts for installation on aircraft or aircraft components during the course of maintenance in accordance with paragraph 21.303(2)(a) of CAR 1998. Aircraft parts manufactured as described in this appendix do not require an Australian Parts Manufacturer Approval (APMA).

**2. MANUFACTURING OF PARTS**

2.1 Provided that an organisation has been approved to maintain aircraft or aircraft components, under regulation 30 of CAR 1988, such an organisation may only manufacture a replacement part for those aircraft or aircraft components covered by their certificate of approval, provided that:

- the aircraft parts are required during the course of maintenance
  - appropriate procedures for the manufacture of the parts are contained in the organisation's system of quality control
  - the aircraft parts are manufactured in accordance with approved data
  - the aircraft parts are manufactured in accordance with the manufacturer's or a delegate of regulation 35 of CAR 1988 approved drawings and specifications
  - the organisation has the capability to manufacture particular aircraft parts with respect to appropriate facilities, tools and trained/qualified staff
  - the manufactured parts are identified as being made by the AMO
  - the manufacture of the part is covered by the system of quality control.
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