



# Advisory Circular

TCAA-AC-AWS013E

February 2020

## TECHNICAL STORES MANAGEMENT

### 1.0 PURPOSE

This Advisory Circular (AC) is issued to provide guidance on the establishment and management of maintenance facility technical stores.

### 2.0 REFERENCES

Regulation 17 (5) and (6) of the Civil Aviation (AMO) Regulations, 2017 as amended

### 3.0 GUIDANCE AND PROCEDURES

#### 3.1 Parts and Materials Information:

3.1.1 Approved parts: An approved part is one that meets approved design data applicable to the part and having been manufactured and subsequently maintained in accordance with the requirements of the State of Design, Manufacture, or State of Registry, as applicable.

3.1.2 Standard parts: Are approved parts conforming to national or industry accepted standard.

3.1.3 Unapproved Parts: These are parts that do not meet the criteria described in paragraphs 3.1.1 and 3.1.2; they also include parts improperly returned to service.

3.1.4 Parts and material acceptance: The process of evaluating parts and material for acceptance involves establishing that the part/material is authentic, conforms to the relevant type design, customers order, physical state and accompanying release documents.

3.2 Approved technical stores:

a) Approved technical stores comprise of Quarantine and Bonded stores.

(i) Quarantine Store - Incoming: Provide storage for incoming material and parts until such time as it can be ascertained that they are authentic and conform to the customer's orders.

(ii) Quarantine store – Unserviceable: Provide storage for parts and material awaiting investigation and dispatch for repair.

(iii) Bonded store: Provide storage of parts and material that have been proved authentic and declared serviceable.

#### 3.3 Approved Technical Stores Procedures –

3.3.1 The approved technical stores procedures will be contained in the user manual which could be a standalone document or part of the MPM / MCM and will address the following:

- a) Quarantine and Bonded stores;
- b) Incoming and outgoing inspections;
- c) Shelf/storage life;
- d) Records control;
- e) Parts identification ( markings);
- f) Storage of instruments, tools, rubber items etc;
- g) Segregation of parts and materials in the bonded store;
- h) Storage facility; and
- i) Special storage.

### 3.4 Parts and Material Authenticity Evaluation:

3.4.1 Involves establishing that the parts and material conforms to approved design specifications, and have retained the essential properties assumed in the design as qualified by the supporting documents.

### 3.4.2 Information on the supporting documents shall include the following:

- a) The authority under which they are issued;
- b) Reference identification for the purposes of traceability;
- c) Name, address and approval reference of the issuing organization;
- d) Work order, contract or invoice number;
- e) Quantity, description, part numbers and, if applicable, serial numbers of the parts;
- f) Relevant information concerning any shelf life limitations, special storage condition requirements, compliance or non-compliance with any airworthiness directives, etc;
- g) The signature and approval reference of the person issuing the document; and
- h) Whether the part is new or used.

### 3.5 Parts and Material Suppliers

These are organisations that hold parts and material for a limited period, the part and data being passed in their entirety to the operator, who has the obligation to ensure that the part is correct and that the documentation truly reflects the status of the part.

### 3.6 Salvaged Parts and Materials

Parts removed from accident aircraft and aircraft no longer in service shall be tagged unserviceable, and shall be subjected to the normal unserviceable parts process

### 3.7 Storage Procedure

3.7.1 The conditions of storage of aircraft supplies are important. The premises should be clean, well ventilated, and maintained at even dry temperature to minimise the effect of

condensation. In many cases the manufacturer will specify the temperature and relative humidity in which the products should be stored. In case of such specific requirements, instruments and or Tell-Tell Desiccant must be in place to ensure such conditions are maintained within the specified range.

3.7.2 There must be a well defined procedure for receiving, storage, requisition and dispatch of aeronautical supplies. It is required that the receiving, quarantine, bonded, and dispatch functions of a technical store are segregated.

3.7.3 On reception after the aircraft supplies have been verified to:

- a) Comply with the order part number requirements.
- b) have the necessary certification and release to service documents
- c) be in generally good condition and have not sustained any damage

3.7.4 The supplies should be issued with a Goods Received Number (GRN) or Batch Number and a company Serviceable Label. The GRN shall be recorded on all the supplies incoming documents which must be preserved, and on the issued serviceable label which should be secured on the part or material before they are forwarded to the bonded stores.

*Note: The GRN enables the part or material to be traced to the incoming documents and its production source. It must be recorded on the aircraft records when the part is installed on the aircraft.*

3.7.5 The serviceable label in addition to the GRN must indicate the part or material part number, serial number, special storage requirements, and shelf life as applicable.

3.7.6 Temperature and Humidity Control As Applicable

- a) There should be a procedure to ensure that temperature and humidity are checked at regular intervals and recorded.
- b) Vapour Phased Inhibitor should only be used when approved by the manufacturer of the part.
- c) Where oils, fluids, or compounds are used as temporally protection on metal articles, it should be ascertained that the material and the method of application is approved by the manufacturer of the part.
- d) Desiccants e.g. silica-gel where used to protect stored parts, should be inspected and/or renewed at specified intervals or whenever airtight containers have been opened.

3.7.7 Racks and Bins – Clearly marked with the part number and bin location are preferred when the nature of the stock permit their use because they allow free circulation of air.

3.7.8 Methods of storage should be such that batches of material or parts are issued in strict

rotation, i.e. old stock should be issued before new stock. This caters for perishable goods, instruments and other components which have definite storage limiting periods.

3.7.9 Components and parts that have definite storage limiting period should have the storage limit date clearly indicated on the component tag. On expiry of the storage period the parts should be withdrawn from the stores for checking or overhaul as recommended by the manufacturer. The effective storage limiting periods of some equipment may be considerably reduced if the recommended storage conditions are not provided. It is therefore important to note that the manufacturers recommended storage limiting periods can only apply in prescribed storage conditions.

3.7.10 Technical stores must have an acceptable easy procedure for management of components and material shelf storage limiting periods.

3.7.11 Segregation of Stock

- a) Materials which may have deleterious effects on others should be segregated; this is to prevent escaping fumes affecting the parts and or material.
- b) Flammable material such as dope, thinners, paint should be kept in a store isolated from the main building.

### **3.8 Requisition and Issuing of Parts**

3.8.1 There should be an acceptable procedure for requisitioning parts and material from the technical stores. It is required that there are requisition forms and that parts should not be issued unless such filled forms have been presented.

3.8.2 The requisition shall be authorised by an appropriate personnel and shall be of a type that allows a copy to be retained by the stores for records and a copy to be sent with the issued part. It shall indicate the requisitioned part's name, part number and aircraft or sub-component to which it shall be installed.

3.8.3 The stores personnel shall record on the requisition the serial number and the GRN (batch number) of the item issued. It is required that a copy of the requisition is retained by the technical stores.

3.8.4 If the requisitioned item is nil stock it is required to make a nil stock entry on the requisition. It is important to be aware that Nil Stock might affect aircraft Minimum Equipment List (MEL) and (CDL) capability and permitted Dispatch Deviation.

### **3.9 Unapproved parts reporting**

3.9.1 Systems used by end users, to report to the Manufacturer / Type Certificate holders and the Authority, are intended to provide widespread warning of the detection of unapproved parts so that operators of similar equipment can be made aware as soon as possible. In view of the likely random appearance of unapproved parts, access to reporting system must be easy and available at

all reasonable times. It follows that publicity for the reporting system (and the programmes generally) should be widespread.

3.9.2 In order to obtain as much information as possible from a report of a suspected unapproved part, it is necessary to have a standardized reporting format. Information required will include part description and from where received; part number and (if applicable) serial number; particular colours, markings, dimensions and features common to the unapproved part which distinguish it from the genuine item; and the nature of any accompanying documentation.

3.9.3 At any time a part is deemed to be suspect, it and the accompanying documentation, if any, should be quarantined immediately and held until the body responsible for processing the reports is satisfied that the evidence is no longer required or until the authenticity of the part has been established.

3.9.4 Some reports of suspected unapproved parts will eventually turn out to be false as further information becomes available in the form of supporting documentation etc. A successful reporting system should accept such false alarms and the wasted effort they generate in the knowledge that to discourage them might eventually lead to the suppression of a genuine report.

### **3.10 Disposal of scrapped parts**

3.10.1 Those responsible for the disposal of scrapped aircraft parts and materials should consider the possibility of such parts and materials being misrepresented and sold as serviceable at a later date. Caution should be exercised to ensure that the following types of parts and materials are disposed of in a controlled manner that does not allow them to be returned to service:

- a) parts with non-repairable defects, whether visible or not to the naked eye;
- b) parts that are not within the specifications set forth by the approved design, and cannot be brought into conformity with applicable specifications;
- c) parts and materials for which further processing or rework cannot make them eligible for certification under an approved system;
- d) parts subjected to unacceptable modifications or rework that is irreversible;
- e) life-limited parts that have reached or exceeded their life limits, or have missing or incomplete records;
- f) parts that cannot be returned to an airworthy condition due to exposure to extreme forces or heat (see 3.12.3 below); and
- g) principal structural elements removed from a high-cycle aircraft for which conformity cannot be accomplished by complying with mandatory requirements applicable to aging aircraft.

3.10.2 Scrapped parts should always be segregated from serviceable parts and when eventually disposed of should be mutilated or clearly and permanently marked. This should be accomplished in such a manner that the parts become unusable for their original intended use and unable to be reworked or camouflaged to provide the appearance of being serviceable, such as by re-plating, shortening and rethreading long bolts, welding, straightening, machining, cleaning, polishing, or repainting.

3.10.3 Mutilation may be accomplished by one or a combination of the following procedures:

- a) grinding,
- b) burning,
- c) removal of a major lug or other integral feature,
- d) permanent distortion of parts,
- e) cutting a hole with cutting torch or saw,
- f) melting,
- g) sawing into many small pieces,
- h) any other method accepted by the airworthiness authority on a case by case basis.

3.10.4 The following procedures are examples of mutilation that are often less successful because they may not be consistently effective:

- a) stamping or vibro-etching,
- b) spraying with paint,
- c) small distortions, incisions or hammer marks,
- d) identification by tag or markings,
- e) drilling small holes,
- f) sawing in two pieces only

3.10.5 Since manufacturers producing approved parts should maintain records of serial numbers for “retired” certified life-limited or other critical parts, the organisation that mutilates a part should provide the original manufacturer with the data plate and/or serial number and final disposition of the part.

3.10.6 When scrapped parts are disposed of for legitimate non-flight uses, such as training and education aids, research and development, or for non-aviation applications, mutilation is often not appropriate. In such cases the parts should be permanently marked indicating that they are not serviceable. The following methods should be used to prevent the part re-entering the aviation supply system:

- a) permanently marking or stamping the part, as “NOT SERVICEABLE.” (ink stamping is not an acceptable method)
- b) removing original part number identifications;
- c) removing data plate identification;
- d) maintaining a tracking or accountability system, by serial number or other individualised data to record transferred unsalvageable aircraft parts;
- e) including written procedures concerning disposal of such parts in any agreement or contract transferring such parts.

Note: Unsalvageable parts should not be released to any person or organisation that is known to return unsalvageable parts back into the aviation supply system due to the potential safety threat.

### **3.11 Parts removed from an aircraft no longer in service**

3.11.1 Aircraft withdrawn from service are often used as a source of spare parts. These parts, although serviceable at the time the aircraft was placed in storage, may have been affected adversely by storage conditions, including especially environmental factors, or by the length of storage.

3.11.2 It is important that the removal process be planned and controlled in a manner as close as possible to that adopted for routine maintenance tasks on in-service aircraft. The following points in particular should be considered:

- a) the means by which the part is removed should be in accordance with the approved maintenance manuals, using the tooling specified;
- b) adequate access equipment should be provided;
- c) if conducted in the open, disassembly should cease during inclement weather;
- d) all work should be carried out by appropriately qualified maintenance personnel;
- e) all open connections should be blanked; and
- f) a protected and enclosed quarantine storage area for the parts being removed should be provided in the immediate vicinity of the area.

3.11.3 An assessment for condition and eventual return to service for each removed part will need to be conducted by a suitably approved organisation. The extent of the work necessary before the part is returned to service may range from a simple external visual inspection to a complete overhaul.

### 3.12 Parts recovered from aircraft involved in accidents

3.12.1 When an aircraft has been involved in an accident, the title may pass from the insured owner to other persons (e.g. aircraft insurers); this salvage may be offered for sale either complete or as separate items in an “As is, where is” condition. While some items may be totally unaffected by the accident or incident which caused the aircraft to be declared as salvage, it is essential to obtain clear evidence that this is the case. If such evidence cannot be obtained, the item may not be returned to service.

3.12.2 Before overhaul and reinstallation can be considered, all such items must therefore be subject to competent assessment and inspection in the light of adequate knowledge of the circumstances of the accident, subsequent storage and transport conditions, and with evidence of previous operational history obtained from valid airworthiness records. Confirmation of this assessment in the form of an airworthiness release is essential.

3.12.3 In particular, if a crash load is sufficient to take any part above its proof strength, residual strains may remain which could reduce the effective strength of the item or otherwise impair its functions. Loads higher than this may of course crack the item, with even more dangerous potential. Further, a reduction in strength may be caused by virtue of the change of a material’s characteristics following overheat from a fire. It is therefore of the utmost importance to establish that the item is neither cracked, distorted or overheated. The degree of distortion may be difficult to assess if the precise original dimensions are not known, in which case there is no option but to reject the item. Any suggestion of overheating would be cause for a laboratory investigation into significant change of material properties.

### 3.13 Control of unserviceable parts

3.13.1 A part shall be considered unserviceable in any one of the following circumstances:

- a) expiry of the service life limit as defined in the maintenance program;
- b) non-compliance with the applicable airworthiness directives or other continuous airworthiness requirement mandated by the Authority of state of design;
- c) absence of the necessary information to determine the airworthiness status or eligibility for installation;
- d) evidence of defects or malfunctions;
- e) involvement in an incident or accident likely to affect its serviceability.

Unserviceable parts must be identified and stored in a secure location until a decision is made on the future status of such parts.



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**Director Safety Regulation**