



TTCAA Advisory CIRCULAR

Subject: AUTHENTICITY AND SERVICEABILITY OF AIRCRAFT PARTS

TTCAA Advisory Circular TAC-026A

Date: 05/05/31

PURPOSE

1. The purpose of this TTCAA Advisory Circular (TAC) is to provide guidance on the establishment of a system of control to ensure that only parts meeting the approved design data applicable to a Trinidad and Tobago aircraft, are installed on that aircraft.

GENERAL

2. (1) ICAO Annex 8, Part III-A, 4.1.2, Part III-B, Sub-Part D, 1.3 and Part IV, 4.1.2 under the heading “Materials” requires that all materials used in those parts of an aircraft which are essential for its safe operation shall conform to approved specifications, and that those specifications shall be such that materials accepted as complying with them shall have the essential properties assumed in the design.

(2) The need to ensure that parts installed on an aircraft meet the design specification and are serviceable is self-evident. The installation of any part failing to meet the intended design requirements degrades those requirements, leading to a degradation of airworthiness.

REFERENCES

3. (1) FAA advisory circular AC 20-62D as amended provides information and guidance for use in determining the quality, eligibility and traceability of aeronautical parts and materials intended for installation on US type certified products.

(2) ICAO Doc 9760.

(3) TTCAR’s No. 5:35, No. 6:25, No. 6:IS26

APPROVED PARTS

4. (1) An approved part is one meeting approved design data applicable to that part and which has been manufactured and subsequently maintained in accordance with the requirements of the State of Design, Manufacture or Registry, as applicable.

Note.— A parts approved pursuant to 4(1) is eligible for installation on a specific aircraft if — and only if — it also meet the approved design data applicable to the particular aircraft on which it is to be installed. For example, a seat designed and approved for 9 g forward loads is not eligible for installation on an aircraft which is required to have a seat that is dynamically tested for 16 g.

(2) Standard parts such as fasteners are considered as approved parts when in accordance with a national or industry accepted standard and when referenced in the type design of the particular aircraft.

UNAPPROVED PARTS

5. Parts not meeting the criteria described in paragraph 4 are considered to be unapproved. Unapproved parts also include those parts improperly returned to service, for example:

- (a) Parts supplied directly to the user by a subcontractor not entitled to do so;
- (b) Parts maintained or approved for return to service by a person or organization not approved to do so;
- (c) Parts not maintained in accordance with the requirements of the applicable approved data; and
- (d) Parts having reached their life limit, including, if applicable, any shelf-life limit.

SUPPORTING DOCUMENTATION

6. (1) A documentation process providing written evidence of the acceptability of a part is an essential element of any system designed to ensure that only approved parts are installed on an aircraft. Such a process is intended to provide all relevant information concerning the part to which it refers sufficient to enable a potential installer to readily ascertain its status.

(2) Documents such as JAA Form One, FAA Form 8130-3 and TCCA Form 24-0078 will contain information relating to:

- (a) The authority under which it is 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 number and, if applicable, serial number of the part;
- (f) Relevant information concerning any life limitations, 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) The TTCAA accepts the use of FAA form 8130-3, JAA Form One and TCCA Form 24-0078 in the system of control of parts to ensure that only approved parts are installed on a Trinidad and Tobago aircraft.

(4) The use of TTCAA Form 100 which is similar to the FAA, JAA and TTCAA forms is covered in Appendix 1 of this TAC.

(5) Any part not accompanied by the appropriate documentation would be considered to be unapproved.

PRECAUTIONS TO PREVENT THE INADVERTENT ACCEPTANCE OF UNAPPROVED PARTS

7. (1) Documentary evidence of compliance with an approved process will not in itself provide a guarantee against the installation of unapproved parts if the original supplier of such parts knowingly provides false information or otherwise sets out to deceive.

(2) It is always necessary to have secondary defences in place designed to give early warning of unapproved parts prior to their release for fitment. The primary defence in such cases is a strong, well-informed and alert parts ordering and receiving system which, through auditing and reports, establishes a satisfactory level of confidence in its parts suppliers and which-

- (a) Ensures a continual correlation between parts ordered and parts received;
- (b) Is alert to any unauthorized alterations to supporting documentation and to any inability of the supplier to supply the required documentation;
- (c) Is aware if a quoted price for the part is significantly lower than that quoted by other suppliers;
- (d) Is aware that delivery times are significantly shorter than those quoted by other suppliers; and
- (e) Is aware of parts packaging methods used by approved parts manufacturers, maintenance organizations and distributors, and can detect deviations from these methods.

(3) Organizations, particularly approved maintenance organizations and operators, should ensure that all those staff who have routine contact with parts, including especially buyers, stores staff, mechanics and certifying staff, are fully aware of the dangers posed by unapproved parts and also the likely sources. Ample warnings should be given to such staff about accessing any unapproved parts database. Approved maintenance organizations and operators will also need to ensure that their parts suppliers are fully integrated into the reporting network, and audits will be necessary among staff at intervals to ensure that all remain vigilant to the problem.

UNAPPROVED PARTS REPORTING

8. (1) Systems used by end users to report to Type Certificate holders and regulatory agencies 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 a 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.

(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 and (if applicable) serial numbers; 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) At any time a part is deemed to be suspect, it and any accompanying documentation 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.

(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.

(5) A relatively simple database, preferably computer driven, will be required to maintain a record and allow easy processing of reports of suspected unapproved parts. The database should be capable of interrogation such that any common thread within the reports received is readily identified by keyword access. The database itself can be a dedicated system or part of a much larger general occurrence reporting system.

(6) In view of the international nature of the aviation industry and in particular the known international nature of the generation and distribution of unapproved parts, the ability to link national databases is obviously advantageous, the unimpeded cross-flow of information being essential in successfully combatting the problem.

PARTS STOCKISTS AND DISTRIBUTORS

9. (1) It is recognized that parts stockists and distributors have a significant influence over the control of unapproved parts. Such organizations have an established commercial role of stocking or obtaining parts, often at short notice. Some States approve stockists and distributors but others do not.

(2) In airworthiness terms, the parts supplier's role is simply that of a holder of a part and its supporting data for a limited period, the part and data being passed in their entirety to the purchaser. The most effective control is exercised by the purchaser of the parts by ensuring that the part is correct and that the documentation truly reflects the status of the part. Further assurance is provided by the installer purchasing only from those suppliers having a known satisfactory record.

PARTS REMOVED FROM AN AIRCRAFT NO LONGER IN SERVICE

10. (1) Aircraft withdrawn from service are often used as a source of spare parts, a process sometimes described as "parting out". 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.

(2) It is important that the part 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 normal maintenance data (e.g. 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 work area.

(3) An assessment for condition and eventual return to service of each removed part will need to be conducted by a suitably approved organization. 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.

PARTS RECOVERED FROM AIRCRAFT INVOLVED IN ACCIDENTS

11. (1) When an aircraft has been involved in an accident, the title to the salvage 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 aircraft 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 shall not be returned to service.

(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) 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 an even more dangerous potential. Further, a reduction in strength may be caused by virtue of the change of a material’s characteristics following overheating 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.

DISPOSAL OF SCRAPPED PARTS

12. (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 paragraph 8 and 9 above); and
- (g) Principal structural elements removed from a high cycle aircraft for which conformity cannot be accomplished by complying with the mandatory requirements applicable to aging aircraft.

(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.

(3) 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; alternatively, the original part number or data plate information can be removed or a record kept of the disposition of the parts.

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Appendix 1

The Authorized Release Certificate TTCAA FORM 100

INTRODUCTION

1. This appendix only covers the use of TTCAA Form 100 for maintenance purposes.

PURPOSE AND SCOPE

2. (1) The purpose of the Certificate is to release assemblies/items/components/parts (hereafter referred to as 'item(s)') after manufacture and to release maintenance work carried out on such items under the approval of the Authority and to allow items removed from one aircraft/aircraft component to be fitted to another aircraft/aircraft component. The Certificate referenced TTCAA Form 100 is called the authorized release certificate.

(2) The Certificate is to be used for export/import purposes, as well as for domestic purposes, and serves as an official certificate for items from the manufacturer/maintenance organization to users. The certificate is not a delivery or shipping note. It can only be issued by organizations approved by the Authority within the scope of the approval or Authority itself. The Certificate may be used as a rotatable tag by utilizing the available space on the reverse side of the Certificate for any additional information and despatching the item with two copies of the Certificate so that one copy may be eventually returned with the item to the maintenance organization. The alternative solution is to use existing rotatable tags and also supply a copy of the Certificate.

(3) For maintenance activity, whilst the Certificate is primarily intended for use by an approved maintenance organizations, provision has been made to allow use by non-approved maintenance organizations in accordance with existing Regulations - such as for general aviation and private operation. Under no circumstances may a certificate be issued for any item when it is known that the item has a defect considered a serious hazard to flight safety.

(4) A Certificate should not be issued for any item when it is known that the item is unserviceable except in the case of an item undergoing a series of maintenance processes at several approved maintenance organizations and the item needs a Certificate for the previous maintenance process carried out for the next approved maintenance organization to accept the item for subsequent maintenance processes. As mentioned for Block 13, a clear statement of limitation should be endorsed in Block 13.

GENERAL

3. (1) The Certificate should comply with the format attached including block numbers in that each block must be located as per the layout. The size of each block may however be varied to suit the individual application, but not to the extent that would make the Certificate unrecognizable. The overall size of the Certificate may be significantly increased or decreased so long as the certificate remains recognizable and legible. All printing should be clear and legible to permit easy reading.

(2) The Certificate should either be pre-printed or computer generated but in either case the printing of lines and characters must be clear and legible. Pre-printed wording is permitted in accordance with the attached model but no other certification statements are permitted. Completion of the Certificate should be in English when it is used for export purposes.

The details to be entered on the Certificate can be either machine/computer printed or handwriting using block letters and should permit easy reading. Abbreviations should be restricted to a minimum.

(3) The space remaining on the reverse side of the Certificate may be used by the originator for any additional information but should not include any certification statement. The original Certificate should accompany the items and correlation should be established between the Certificate and the items. A copy of the Certificate should be retained by the organization that manufactured or maintained the item. Where the Certificate format and data is entirely computer generated, subject to acceptance by the Authority, it is permissible to retain the Certificate format and data on a secure database.

(4) Where a single Certificate was used to release a number of items and those items are subsequently separated out from each other, such as through a parts distributor, then a copy of the original Certificate should accompany such items and the original Certificate should be retained by the organization that received the batch of items. Failure to retain the original Certificate could invalidate the release status of the items.

(5) The Certificate that accompanies the item may be attached to the item by being placed in an envelope for durability.

COMPLETION OF THE RELEASE CERTIFICATE BY THE ORIGINATOR

4. (1) Except as otherwise stated, there should be an entry in all blocks to make the document a valid certificate.

- (a) **Block 1** The name and country of the Authority under whose approval the certificate was issued. This information may be pre-printed.
- (b) **Block 2** Pre-printed "Authorized Release Certificate/TTCAA Form 100".
- (c) **Block 3** A unique number should be pre-printed in this block for Certificate control and traceability purposes except that in the case of a computer generated document, the unique number need not be pre-printed where the computer is programmed to produce the number.
- (d) **Block 4.** The full name and address plus mailing address if different of the approved organization releasing the items covered by this certificate. This block may be pre-printed. Logos, etc., are permitted if the logo can be contained within the block.
- (e) **Block 5** Its purpose is to reference work order/contract/invoice or any other internal organizational process such that a fast traceability system can be established.
- (f) **Block 6** This block is provided for the convenience of the organization issuing the Certificate to permit easy cross-reference to the 'Remarks' Block 13 by the use of item numbers. Completion is not mandatory. Where a number of items are to be released on the Certificate, it is permissible to use a separate listing cross-referring Certificate and list to each other.
- (g) **Block 7** The name or description of the item should be given. Preference should be given to use of the Illustrated Parts Catalogue (IPC) designation.
- (h) **Block 8** State the Part Number. Preference should be given to use of the IPC number designation.

- (i) **Block 9** Used to indicate the Type-Approved products for which the released items are eligible for installation. Completion of block is optional but if used, the following entries are permitted:
 - (i) The specific or series aircraft, engine, propeller or auxiliary power unit model, or a reference to a readily available catalogue or manual which contains such information, for example: 'A300'.
 - (ii) 'Various', if known to be eligible for installation on more than one model of Type-Approved product, unless the originator wishes to restrict usage to a particular model installation when it should so state.
 - (iii) 'Unknown', if eligibility is unknown, this category being primarily for use by maintenance organisations
- (j) **Block 10** State the number of items being released.
- (k) **Block 11** State the item Serial Number or Batch Number if applicable, if neither is applicable, state "N/A".
- (l) **Block 12** The following words in quotation marks, with their definitions, indicate the status of the item being released. One or a combination of these words should be stated in this block:
 - (i) **'OVERHAULED'** The restoration of a used item by inspection, test and replacement in conformity with an approved standard (*) to extend the operational life.
 - (ii) **'INSPECTED/TESTED'** The examination of an item to establish conformity with an approved standard (*).
 - (iii) **'MODIFIED'** The alteration of an item in conformity with an approved standard (*).
 - (iv) **'REPAIRED'** The restoration of [an item] to a serviceable condition in conformity with an approved standard (*).
 - (v) **'RETREADED'** The restoration of a used tyre in conformity with an approved standard (*).
 - (vi) **'REASSEMBLED'** The reassembly of [an item] in conformity with an approved standard (*).

Example: A propeller after transportation.

NOTE: This provision should only be used in respect of items which were originally fully assembled by the manufacturer in accordance with manufacturing requirements.

(*) Approved Standard means a manufacturing/design/maintenance/quality standard approved by the Authority Approved by the Authority means approved by the Authority or in accordance with a procedure approved by the Authority.

The above statements should be supported by reference in Block 13 to the approved data/manual/specification used during maintenance.

- (m) **Block 13** It is mandatory to state any information in this block either direct or by reference to supporting documentation that identifies particular data or limitations relating to the items being released that are necessary for the User/installer to make the final airworthiness determination of the item. Information should be clear, complete, and provided in a form and manner which is adequate for the purpose of making such a determination.

Each statement should be clearly identified as to which item it relates. If there is no statement, state 'None'. Some examples of the information to be quoted are as follows:

- The identity and issue of maintenance documentation used as the approved standard.
 - Airworthiness Directives carried out and/or found carried out, as appropriate.
 - Repairs carried out and/or found carried out, as appropriate.
 - Modifications carried out and/or found carried out, as appropriate.
 - Replacement parts installed and/or parts found installed, as appropriate.
 - Life limited parts history.
 - Deviations from the customer work order.
 - Identity of national regulation if not TTCAR NO. 6.
 - Release statements to satisfy a foreign maintenance requirement.
 - Release statements to satisfy the conditions of an international maintenance agreement such as, but not limited to, the Canadian Technical Arrangement Maintenance and the USA Bilateral Aviation Safety Agreement – Maintenance Implementation Procedure.
- (n) **Blocks 14, 15, 16, 17 & 18:** Must not be used for maintenance task by approved maintenance organizations. These blocks are specifically reserved for the release/certification of newly manufactured items in accordance with TTCAR NO. 5.
- (o) **Block 19** Contains the required release to service statement for all maintenance by approved maintenance organizations. When non-approved maintenance is being released block 13 should specify the particular regulation. In any case the appropriate box should be 'ticked' to validate the release. The certification statement 'except as otherwise specified in block 13' is intended to address the following situations;
- (i) The case where the maintenance could not be completed.
 - (ii) The case where the maintenance deviated from the standard required by TTCAR 6.
 - (iii) The case where the maintenance was carried out in accordance with a requirement that is not provided for in TTCAR 6. Whichever case or combination of cases should be specified in block 13.
- (p) **Block 20** For the signature of the certifying staff authorized by the approved maintenance organization. This signature can be computer printed subject to the Authority being satisfied that only the signatory can direct the computer and that a signature is not possible on a blank computer generated form.
- (q) **Block 21** The approved maintenance organization reference number given by the Authority.
- (r) **Block 22** The printed name of the Block 20 signatory and personal authorization reference.
- (s) **Block 23** The date of signing the Block 19 release to service. [(yyyy/mm/dd). The release to service should be signed at the "completion of maintenance".]

Note: The User Responsibility Statements are on the lower section of this Certificate.

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1. TRINIDAD AND TOBAGO		2. AIRWORTHINESS APPROVAL CERTIFICATE TTCAA FORM 100				3. System Tracking Ref., No.	
4. Organization Name and Address:					5. Work Order, Contract or Invoice Number		
6. Item	7. Description	8. Part Number	9. Eligibility *	10. Quantity	11. Ser./Batch Number	12. Status/Work	
13. Remarks							
14. Certifies that the items identified above were manufactured in conformity to: <input type="checkbox"/> approved design data and in condition for safe operation <input type="checkbox"/> non-approved design data specified in block 13							
15. Authorized Signature:		16. Approval/Authorization Number:		17. Name (Typed or Printed):		18. Date: (yyyy/mm/dd)	
19 Certifies that unless otherwise specified in block 13, the work identified in block 12 and described in block 13, was accomplished in accordance with - <input type="checkbox"/> TTCAR NO.6 <input type="checkbox"/> other regulation specified in block 13							
20. Authorized Signature:		21. Certificate/Approval Reference Number:		22. Name (Typed or Printed):		23. Date (yyyy/mm/dd):	
User/Installer Responsibilities							
It is important to understand that the existence of this document alone does not automatically constitute authority to install the part, component or assembly.							
Where the user/installer works in accordance with the national regulations of a civil aviation authority different from the airworthiness authority of the country specified in block 1, it is essential that the user/installer ensures that his airworthiness authority accepts parts, components and assemblies from the authority of the country specified in block 1.							
The statements in block 14 and 19 do not constitute installation certification. In all cases, aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.							
Limited life parts must be accompanied by maintenance history including total time/total cycles/time since new.							
* Installer must cross-check eligibility with applicable technical data.							

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