



GOVERNMENT OF INDIA
CIVIL AVIATION DEPARTMENT
DIRECTOR GENERAL OF CIVIL AVIATION

AAC NO 3 of 2006
Date: 8th September 2006

AIRWORTHINESS ADVISORY CIRCULAR

SUBJECT: AUTHENTICITY AND SERVICEABILITY OF AIRCRAFT PARTS

1. INTRODUCTION:

- 1.1 Sub rule (2) of Aircraft Rule 53 requires that all materials used in those parts of an aircraft which are essential for its safe operation shall conform to approved specifications. This Airworthiness Advisory Circular (AAC) gives the guidance of establishing the authenticity and serviceability of aircraft parts. This AAC gives in detail regarding the approved and unapproved parts, supporting documents for approved parts, precautions to prevent inadvertent acceptance of unapproved parts and reporting the same if received, means to use aircraft parts removed from unserviceable aircrafts and disposal of scrapped parts.
- 1.2 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.
- 1.3 It is essential that for the purposes of continuing airworthiness a system of control exists which ensures that only parts meeting the approved design data applicable to a particular aircraft are installed on that aircraft. This AAC is in conformance with Volume II of the ICAO Document 9760 – Airworthiness Manual and provides guidance for the establishment of such a system.

2. APPROVED PARTS:

- 2.1 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.— Parts approved pursuant to 2.1 are eligible for installation on a specific aircraft if and only if they also meet the approved design data

applicable to the particular aircraft they are to be installed on. 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.

- 2.2 Standard parts such as fasteners are considered as approved parts when they are in accordance with an approved or accepted standard and when referenced in the type design of the particular aircraft.

3. UNAPPROVED PARTS:

Parts not meeting the criteria described in 2.1 and 2.2 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.

4. SUPPORTING DOCUMENTATION:

- 4.1 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.

- 4.2 Such documents (for example the FAA Form 8130-3, JAA Form One and the DGCA Form One) 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.
- 4.3 Any part not accompanied by the appropriate documentation would be considered to be unapproved.

5. PRECAUTIONS TO PREVENT THE INADVERTENT ACCEPTANCE OF UNAPPROVED PARTS:

- 5.1 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.
- 5.2 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.
- 5.3 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.

6. UNAPPROVED PARTS REPORTING:

- 6.1 Systems used by end users, to report to the Manufacturer / Type Certificate holders and DGCA, 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.
- 6.2 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.
- 6.3 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.
- 6.4 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.

7. PARTS STORAGE AND DISTRIBUTORS:

- 7.1 It is recognized that organisation involved in storage and distribution of parts 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.
- 7.2 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, the installer purchasing only from those suppliers having a known satisfactory record provides assurance.

8. PARTS REMOVED FROM AN AIRCRAFT NO LONGER IN SERVICE:

- 8.1 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.

- 8.2 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.
- 8.3 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, depending on the factors noted in 8.1, range from a simple external visual inspection to a complete overhaul.

9. PARTS RECOVERED FROM AIRCRAFT INVOLVED IN ACCIDENT/INCIDENT:

- 9.1 When an aircraft has been involved in an accident/incident, the title to the salvage may pass from the insured owner to other person (e.g. aircraft insurers) and this salvage may be offered for sale either complete or as separate aircraft item in an "as is where is" condition. Though such items may not manifest any visual evidence of damage, distortion or change of characteristics, a serious airworthiness hazard could result from their use without special precautions being taken. While some of the items may be totally unaffected by the accident/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.
- 9.2 All such items must therefore be subjected to an assessment and inspection by a competent person/agency 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, before overhaul and re-installation can be considered.

- 9.3 If the crash load has been above the proof strength, the residual strain remains which may reduce the effective strength of the item or otherwise impair its functioning. Loads higher than this may of course damage the item. Further, a reduction in the strength may be caused by virtue of change of a materials characteristic following overheat from a fire. It is therefore considered utmost important to establish that the items neither cracked, distorted nor 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 evidence of overheating would call for a laboratory investigation.
- 9.4 The standard procedure appropriate to items removed for overhaul following service life may not therefore be considered sufficient for the items from the salvage aircraft. If the information in the manufacturer manual or other technical publication is insufficient to deal with the situation detailed above then the manufacture must be consulted for guidance.

9.5 **INFORMATION REQUIRED FROM AVIATION INSURERS:**

Aviation insurers and other persons who obtain title to salvage parts may supply to salvage purchasers the details of the accident/incident leading to aircraft or aircraft item, being declared as salvage. It is also common practice for aviation insurer to pass over the airworthiness records to the salvage purchaser. Whilst such information and records are an essential part of the assessment, where return to service is considered, they are not a guarantee that the item is acceptable for re-installation. No operator should use any item/equipment of the aircraft, which has been involved in an accident/incident without observing the above detailed procedures and the permission of the DGCA Headquarters. The operator should forward their request seeking permission for use of item/equipment of the accidental aircraft through respective regional office ensuring the above procedure.

10. DISPOSAL OF SCRAPPED PARTS:

- 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 para 8 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.

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.

10.3 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.

11. No operator should use any item/equipment of the aircraft, which is no longer in service or which has been involved in an accident/incident without observing the above detailed procedures and the permission of the DGCA Headquarters. The operator should forward their request seeking permission for use of item/equipment of the accidental aircraft through respective regional office ensuring the above procedure. Other procedures like unapproved parts reporting, disposal of scrapped parts etc. shall be religiously followed in order to ensure continued airworthiness of aircraft and also to prevent unintentional use of unapproved parts.

12. This supersedes Airworthiness Advisory Circular No. 4 of 2003, dated 30th October 2003.



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