Trinidad and Tobago
Civil Aviation Authority

TTCAA Advisory Circular

Subject: MAJOR MODIFICATIONS AND MAJOR REPAIRS
TTCAA Advisory Circular TAC-023D
Date: 2013/10/04

SECTION 1

GENERAL CONSIDERATIONS

PURPOSE

1. (1) The purpose of this TTCAA Advisory Circular (TAC) is to provide guidance to operators by setting out acceptable means for showing that modifications or repairs to aircraft comply with the requirements of TTCAR No. 5:23 and 5:34, and to clearly define when TTCAA approval is required for repairs or modifications.

(2) The information is intended to apply to all types and classes of aircraft for which a Type Certificate or equivalent document has been issued and includes all components of the aircraft such as engines, propellers and equipment.

(3) This TAC is divided into the following sections:

(a) Section 1 – General Considerations;

(b) Section 2 – Compatibility of Modifications and Repairs;

(c) Section 3 – Approval of Modifications;

(d) Section 4 – Approval of Repairs;

(e) Appendix 1 – Criteria for the Classification of Major and Minor Modifications and Repairs;

(f) Appendix 2 – Form TF-059 – Request for approval of data (modifications or repairs);

(g) Appendix 3 – Form TF-035 – Notice of embodiment of Major Repair or Major Modification;

(h) Appendix 4 – Instructions for the completion of TTCAA Form TF-035.

(4) TAC-023D replaces and supercedes TAC-023C which is now cancelled and should be destroyed.

DEFINITIONS

2. (1) The following definitions apply when used in this TAC:

(a) **Acceptable Data.** The drawings and specifications necessary to define the configuration and design features of the modification or repair. These drawings and specifications include information on mass and balance, operating limitations, flight characteristics, dimensions, materials, and processes that are necessary to define the modification or repair. The following are examples of acceptable data:

(i) The aircraft Manufacturer's manuals;

(ii) Other data approved by the State of Design and acceptable to the Authority; such FAA AC 43.13-1B & FAA AC 43.13-2B

(b) **Alter.** To change or modify;

(c) **Approved Data.** Substantiating and descriptive technical data, used to make a major repair or major modification that is approved or accepted by the Authority. The following list, although not all-inclusive, contains sources of approved data:

(i) Type Certificate Data Sheets (TCDS);

(ii) Supplemental Type Certificate (STC), which specifically applies to the item being repaired/altered. Such data may be used in whole or part as included within the design data associated with the STC;

(iii) Component manufacturer’s manuals or instructions,

(iv) Airworthiness Directives (ADs);

(v) Service Bulletins (SB) and letters or similar documents approved by the State of Design;

(vi) Other data approved by the State of Design and acceptable to the Authority.

(d) **Certificate of Release to Service.** This has the meaning as defined in TTCAR 3; 5, and 6 as appropriate.

(e) **Initial Approval.** The first approval of equipment of a given make and model;

(f) **Modification.** The alteration of an aircraft or aeronautical product in conformity with an approved standard. Modification may be further classified as follows: MAJOR or MINOR.

(g) **Major Modification.** A major modification means a type design change not listed in the aircraft, aircraft engine or propeller specifications that might appreciably affect the mass and balance limits, structural strength, performance, powerplant operation, flight characteristics or other qualities affecting airworthiness or environmental characteristics, or that will be embodied in the product according to non-standard practices;

(h) **Minor Modification.** A modification other than a major modification;

(i) **Repair.** A design change to an aeronautical product intended to restore it to an airworthy condition and to ensure that the aircraft continues to comply with the design aspects of the airworthiness requirements used for the issuance of a Type certificate for that aircraft type after it has been damaged or subject to wear.

(j) **Major repair.** Any repair of an aircraft or aeronautical product that might appreciably affect the structural strength, performance, powerplant, operation flight characteristics or other qualities affecting airworthiness or environmental characteristics, or that will be embodied in the product using non-standard practices;

(k) **Minor repair.** A repair other than a major repair.

(l) **Substantiating.** Supporting or verifying with proof or evidence;

(2) This advisory circular provides further guidance on the interpretation of major modifications and major repairs, the requirements to be met before incorporating a major modification or major repair, and the use of the TTCAA Form TF-035.

(3) Throughout this TAC the terms "modification" and "alteration" are intended to be synonymous. A minor modification or minor repair should not be classified as major. The criteria at Appendix 1 are used to determine whether a modification or repair is major or minor. A "yes" response to any individual question indicates that the modification or repair should be classified as major. If the modification or repair does not meet the criteria given in the guidance, it should be classified as a minor modification or minor repair.

SUMMARY OF PROCESS

3. (1) The following is a summary of the **major modification and major repair** process from the initial formal request to the recording of the embodiment of the major modification or major repair:

(a) The applicant makes a formal request to the Authority on form TF-059 for the modification or repair package including documents and approved data;

(b) The data is assessed to determine if it is acceptable, and can be approved. If acceptable the data will be approved for embodiment in the applicable aeronautical product.

Note: *The TTCAA will not approve a request for major modification or major repair unless the application is supported by the required approved data*;

(c) The person embodying the modification must be appropriately trained and qualified to determine if the repair or modification is major using the criteria at Appendix 1. If it is determined that the repair/modification is major then the person performing the modification/repair shall certify in the relevant records the conformity of the modification or repair to the applicable technical data;

(d) When partially or fully complete the embodiment of the modification or repair is recorded in the appropriate airframe, engine, or propeller log as the maintenance records. The TTCAA Form TF-035 shall be completed and included in the maintenance records and a copy forwarded to the TTCAA within 48 hours after the aircraft or aeronautical product has been approved for return to service.

GENERAL CONSIDERATIONS APPLICABLE TO THE DESIGN AND APPROVAL OF MODIFICATIONS AND REPAIRS

General

4. (1) All modifications and repairs to an aircraft or aeronautical product shall comply

with airworthiness requirements acceptable to the Authority.

(2) A major modification or major repair to an aircraft must be accomplished in accordance with data approved by the Sate of Design and accepted by the Authority, such that the modification or repair conforms to applicable standards of airworthiness.

Knowledge Requirements

5. (1) The design of a major modification or major repair to an aircraft should not be attempted unless the applicant has a sound knowledge of the design principles embodied in the aircraft type being modified or repaired. In many cases, access to the analysis and test reports from the original type certification of the aeronautical product will be required. For this reason participation in, or review of, the modification or repair design by qualified representatives of the organization responsible for the type design is essential.

Design Changes Requiring A New Type Certificate

6. (1) Some design changes may be so extensive that an application for a new Type Certificate will be required. Such changes are outside the scope of this document.

(2) Application for a new Type Certificate would be required if the airworthiness authority of the State of Design finds that the change in design, power, thrust or mass is so extensive that a substantially complete investigation of compliance with the applicable design standards is required. A new design derived from an existing aeronautical product design and proposed either by the original manufacturer or as a modification to the product by someone other than the original manufacturer may therefore require a new Type Certificate.

(3) A substantially complete investigation is required when most of the existing justification is not applicable to the changed product. This applies to the scope of the investigation required to establish compliance. For example, an extensive change may negate the validity of extrapolation or use of certain analyses or tests that were used to show compliance in the original or previous type certification of the product.

Compatibility With Existing Design Changes

7. Consideration would be given during the process to compatibility between the proposed design of the modification or repair and other existing design changes, such as modifications, repairs and airworthiness directives (see Section 2 for more detail on this subject).

Retention Of Substantiating Data

8. To show that the modified or repaired aeronautical product complies with the appropriate design standards, reports on analyses and tests should be prepared. The airworthiness authority of the State of Design granting the approval of the design of the modification or repair would require that the holder of the approval:

(a) Retain the records of the analyses and tests performed to demonstrate compliance until the aircraft, modified or repaired in conformity with the approved modification or repair, is permanently withdrawn from service;

(b) Make the records available to the authority upon request; and

(c) Ensure that no person destroys or otherwise disposes of any record referred to above without the authority's prior permission.

Responsibilities Of Holders Of Approvals

9. (1) The airworthiness authority of the State of Design would normally require the person or organization responsible for the design of the modification or repair to -

(a) Furnish to each intended user at least one set of any amendment or supplement to a flight manual, maintenance manual or instructions for continuing airworthiness produced in obtaining approval of the design and make available to any user subsequent changes to such documents;

(b) If service experience shows a safety deficiency in the modification or repair:

(i) Immediately advise his airworthiness authority of the deficiency;

(ii) Prepare appropriate design changes and make them available to this airworthiness authority for mandatory continuing airworthiness action; and

(iii) Make the descriptive data concerning the changes available to all operators of products affected by the mandatory action.

(2) Descriptive data concerning changes to a modification or repair would normally be published in the form of a service bulletin. The approval holder's responsibility includes the need to advise operators of any vendor bulletins for equipment included in a modification. (See also TAC-21A for more information on exchange of airworthiness data).

Validation of a State of Design Approval Engineer (DER or Equivalent)

10. (1) Where modification or repair data submitted to the TTCAA is not approved by the State of Design, or not specific to an aircraft by serial number, an appropriately trained and qualified representative from the State of Design must be sought to determine compliance with the original State of Design type certification basis and to provide assurance that continued airworthiness requirements are met.

(2) The TTCAA may validate a State of Design Designated Engineering representative (DER) certificate in accordance with the requirements of TTCAR No. 1:20 as follows:

(a) The operator would need to nominate to the TTCAA an appropriately qualified DER or equivalent, in the relevant discipline;

(b) The nominated DER must submit to the TTCAA his relevant certificate accompanied by all authorization and approvals issued by the State of Design and a resume which includes details of his most recent recurrent training required by the State of Design, and work experience over the previous 12 months;

(c) Upon satisfactory confirmation by the TTCAA that the proposed DER is appropriately qualified, the TTCAA shall validate the DERs certificate by issuing a TTCAA authorization to be carried with the DER certificate issued by the State of Design;

(d) The validity of the authorization issued under (c) shall not extend beyond the period of validity of the certificate issued by the State of Design.

(e) Where the modification or repair data submitted to the TTCAA has been assessed and approved by the TTCAA validated DER, the TTCAA will issue a modification or repair approval as applicable;

(f) It is the responsibility of the air operator to inform the manufacturer of the modification or repair embodied.

Flight Testing

11. (1) It may be necessary to flight test a modified aircraft in accordance with the requirements of the State of Design, to demonstrate compliance with the applicable standards of airworthiness or to determine that the characteristics of the aircraft remain acceptable. Some examples of design changes which would normally require flight testing are set out in the following sections.

(a) **Flight characteristics**. Flight test assessments are usually required when a modification may affect aircraft flight characteristics including the following:

(i) Controllability and manoeuvrability;

(ii) Trim;

(iii) Stability (static and dynamic);

(iv) Stalls;

(v) Spinning (where applicable);

(vi) Ground or water handling characteristics; and

(vii) Miscellaneous flight characteristics, such as vibration and buffeting, high speed and out-of-trim characteristics.

(b) **Performance**. Flight tests are normally required when a modification has a significant effect on the aircraft lift, drag, installed thrust, maximum mass, ground friction characteristics or braking effectiveness. The effect of the modification on the aircraft performance should be considered in all applicable areas, among which may be:

(i) Stall speeds;

(ii) Installed power or thrust;

(iii) Take-off and landing speeds;

(iv) Take-off and accelerate-stop distances;

(v) Landing distances;

(vi) Take-off, approach and landing climb performance;

(vii) Airspeed indicator position error; and

(viii) Altimeter position error.

(d) **Flight deck design**. Modifications affecting pilot compartment view, night vision (e.g. glare and reflections from additional or external lighting), aircraft flight instruments, flight controls, powerplant instruments, warning and caution panels, system controls and displays and pilot workload normally require a flight assessment.

(e) **Flight guidance**. Modification of hardware or software in automatic flight control systems, autothrust, autobrake or autoland systems and flight director systems may require a flight test assessment. The requirement for flight test can best be determined after a comprehensive analysis is conducted to identify the effect of the modification on all other systems interfacing with the modified component.

(f) **Navigation systems**. Flight testing of navigation system modifications includes tests to establish system accuracy and performance in order to demonstrate that the modified equipment performs its intended function and that the aircraft will operate satisfactorily using the installed equipment.

Examples of modifications which can affect navigation system performance and accuracy include-

(i) Addition of externally mounted equipment which may partially obscure a transmitter, antenna, sensor or receiver;

(ii) The relocation of antennae, transmitters and receiving sensors;

(iii) The replacement of navigation system equipment with components that have different specifications;

(iv) Electrical modifications or the addition of systems which may cause electromagnetic interference with the existing navigation systems; and

(v) A software or hardware update to permit Category II or steep approaches or both.

(g) **System operation**. Flight tests may be required after modification of any aircraft system not previously discussed. When considering the need for flight tests, the failure cases should be assessed to the level where the failure is assumed to occur after dispatch of the aircraft with systems inoperative as permitted in the master minimum equipment list. In most cases, the primary objectives of the flight test assessment are:

(i) To confirm that the modified system performs its intended function and has satisfactory operating characteristics;

(ii) To confirm that the modified system does not interfere with the function of other aircraft systems; and

(iii) To ensure that appropriate procedures are documented for the new equipment, as well as any changes to the procedures for other aircraft systems.

Flight Manual Changes

12. The flight manual often needs to be amended by the State of Design as part of a modification approval. Typically, a supplement is produced which includes changes or additions to the basic flight manual information that result from the modification. A flight manual supplement, flight manual amendment or new flight manual is normally required if any of the following conditions is met:

(a) Testing or analysis has shown changes in the operating limitations for the modified aircraft, such as-

(i) Reduction in maximum operating airspeeds;

(ii) Changes to the mass and balance limits;

(iii) Changes to engine operating limitations;

(iv) Reduction in maximum operating altitude;

(v) Restrictions in the operation of the modified aircraft (e.g. daytime VFR only, no icing); and

(vi) Changes to system limitations (e.g. minimum autopilot engage altitude is increased);

(b) Flight testing has shown a need for, or system changes have necessitated, changes to normal, abnormal or emergency procedures; or

(c) Performance characteristics have been changed by the modification. Some examples are:

(i) Pitot static system calibrations;

(ii) Stall speeds;

(iii) Take-off or landing performance or both; or

(iv) Climb performance.

USE OF TTCAA FORM TF-035 FOR MAJOR REPAIR OR MAJOR MODIFICATION

13. Upon completion of all major modification or major repair, details of the major modification or major repair should be entered on TTCAA Form TF-035 by the person who performed the major modification or major repair. A completed copy of the form for each major modification shall be forwarded to the Authority within 48 hours after the aircraft or aeronautical product has been approved for return to service. In the case of a major repair, a copy of the form shall be kept available for inspection by the Authority.

RETENTION OF MODIFICATION AND REPAIR DATA RECORDS

14. (1) Embodiment of the modification is recorded in the maintenance records to demonstrate compliance with design standards and are required to be maintained until the aircraft or component with the modification or repair is permanently withdrawn from service. The retained records are to be available for review by the TTCAA upon request. No record required to be retained under this provision may be disposed of without prior permission of the TTCAA.

(2) Retention of the records is required so that modifications and repair status of the aircraft may be readily established at any time. This may be necessary if an airworthiness deficiency is detected with a modification or repair which requires corrective measures or inspection to ensure compatibility when making design changes to the aircraft.

(3) The records required to be kept will vary with the complexity of the design change. In addition to the records of design approval and release-to-service approval, the following lists some of the kind of data that may be included, as applicable:

(a) A master drawing list and the individual drawings, photographs, specifications and records which identify the design change and locate it on the aeroplane;

(b) Mass and moment change records;

(c) A record of any change in electrical load caused by incorporation of the design change.

(d) A Supplemental Type Certificate (STC) or equivalent document, or service bulletin or structural repair manual reference.

(e) An appropriate engineering order.

(4) TTCAR No. 3:80 requires that the details of modifications and repairs to an aircraft and its major components be retained for a minimum period of 90 days after the unit to which they refer has been permanently withdrawn from service. In the event of a temporary change of an operator the records are required to make available to the new operator and transferred to the new operator in the event of any permanent change of operator.

(5) Supplements to the approved flight manual, maintenance instructions, instructions for continuing airworthiness and repair instructions pertaining to a modification or repair are operating data that the operator should incorporate into the existing operating data for the aeroplane. Since these supplements become a permanent part of the operator's operating instructions or instructions for continuing airworthiness, they need not be retained as part of the records required by TTCAR No. 3. The operator should record the incorporation of the required supplements in the appropriate revision logs.

Minor Modifications and Repairs

15. Any repair or modification that is not a major repair or modification does not require the approval of the TTCAA and would not be subject to the same analysis as a major repair or modifications. Notwithstanding, any minor repair or minor modification for which previously approved data is not available such data must be obtained from the State of Design. The record retention requirements for minor modifications and minor repairs are much simplified, as no modification or repair may be called minor if it affects the airworthiness of the aeroplane. It is nevertheless necessary for the aeroplane operator to retain sufficient records to:

(a) Identify the modification or repair and record that it has been classified as minor;

(b) Record its location on the aeroplane;

(c) Record mass and moment change, if significant; and

(d) Record the release-to-service approval.

This page intentionally left blank

SECTION 2

COMPATIBILITY OF MODIFICATIONS AND REPAIRS

Introduction

1. (1) Whenever a modification or repair is installed on an aircraft, care must be taken to ensure that it is compatible with all other design changes installed on that aircraft. Modifications or repairs designed separately may conflict or interfere with each other, despite having been individually analysed, tested and shown to comply with all applicable standards of airworthiness. Interaction between different modifications or repairs may be of a physical, aerodynamic, structural or fatigue strength, electromagnetic or any other nature. Such interaction may jeopardize the airworthiness of the aircraft.

(2) An example of potential incompatibility would be a repair installed in close proximity to an existing repair. While the two repairs individually may be completely satisfactory if separately installed on an aircraft with no other design changes in the vicinity, the combination in close proximity may introduce additional stress concentrations which cause fatigue cracks to occur after a period of time in service. The designer of a repair scheme should survey the aircraft to be repaired to establish whether there are any other design changes in the vicinity which may interfere. In the case of an existing repair in close proximity to the new damage, it may be necessary to remove the old repair and install a new repair encompassing both damage areas, designed in a manner to reduce any stress concentrations to a level that will not produce fatigue cracking.

(3) In a more general situation, modifications may be separately designed for the same basic aircraft type by different organizations with no knowledge of the other's work. The modifications may be shown separately to comply with all applicable airworthiness standards; however, on attempting to install them on the same aircraft, it may be found that they physically interfere with each other. Alternatively, no problems may be encountered with the installations, but it may be found in service that the combination causes aerodynamic buffeting, stability or control problems, fatigue cracking, structural failure, electromagnetic interference, or any number of other problems. If the concurrent installations of different modifications are not rigorously assessed for compatibility, there exists the possibility that in combination they may cause serious airworthiness hazards.

(4) Modifications and repairs may be designed by the same organization that operates the aircraft into which they are incorporated. In the more general case, however, the organization that designs and obtains design approval for the modification or repair, the operator of the aircraft, and the organization that installs the design change on the aircraft may all be different. Their separate responsibilities are discussed below.

Responsibilities Of Holders Of Approvals

2. (1) In the case of a design change intended as a unique installation on a single aircraft, the aircraft records and the aircraft itself should be surveyed to identify all other design changes to the aircraft which may in any way interfere with the proposed installation. All such existing installations should be considered in the analysis and testing conducted to demonstrate compliance with the standards of airworthiness.

(2) In the more general case where a design change is intended to be sold to many aircraft operators and incorporated on multiple aircraft, it may not be feasible for the designer of the modification or repair to obtain knowledge of the modification status of every aircraft affected. The designer should account for the effects of any potential incompatibilities between the proposed design change and any known existing or reasonably foreseeable modifications or

repairs when conducting analyses and tests to demonstrate compliance with the standards of airworthiness and obtain design approval. Alternatively, limitations may be placed on the design change, explicitly advising potential users that it has not been cleared for compatibility with other modifications or repairs and that the installer should obtain separate design approval for installation in combination with those others.

(3) The holder of a design change approval has a responsibility to assist the approving airworthiness authority to correct airworthiness deficiencies discovered in service which relate to the design change. If, during the course of investigating a perceived unsafe condition related to the design change, the approval holder determines that the unsafe condition results from an incompatibility between the design and another modification or repair, the approval holder should notify the airworthiness authority immediately and recommend corrective measures. If the authority determines that the design change must be altered to prevent the unsafe condition from occurring in other aircraft on which it is installed, it will normally require the approval holder to develop the corrections and issue instructions for the installer. These instructions should provide corrective measures for existing installations and revisions to the installation instructions for future installations. The authority should issue an airworthiness directive to mandate the measures to correct the deficiency on existing installations.

Responsibilities Of Installers

3. Because the holder of a design approval for a particular modification or repair cannot be expected to be aware and to have conducted analyses and tests for all the possible design changes installed on all aircraft of a given type, the installer has a responsibility to verify compatibility with other modifications and repairs before installing any design change. The installer should survey the aircraft records and the aircraft itself to determine what other design changes exist on the aircraft. Any questions of incompatibility with other modifications or repairs arising from the survey should be referred for resolution to the operator.

Responsibilities Of Operators

4. (1) Operators have the overall responsibility to ensure the compatibility of all design changes incorporated in their aircraft. The operator contracting with an installer for incorporation of any aircraft modification or repair should provide the installer with information on all existing design changes to the aircraft so that compatibility may be verified. Any questions of design change incompatibility which may arise during installation or in service should be thoroughly investigated by consultation with the approval authority or approval holder, or by an independent engineering organization. In every case of incompatibility between modifications or repairs, the problem must be corrected and it must be established to the satisfaction of the authority of the State of Registry that the modified aircraft continues to comply with the applicable standards of airworthiness.

(2) In addition to correction of the problem on the aircraft on which it is discovered, it is necessary that any incompatibilities between modifications or repairs be addressed on all other affected aircraft. The operator should promptly report any design change incompatibilities detected during installation or in service to the approval holder, to the installer and to its own airworthiness authority.

SECTION 3

APPLICATION FOR APPROVAL TO EMBODY MODIFICATIONS

Application for approval to embody Modification

1. (1) The approval of a modification which significantly affects the "aircraft type" is recorded by the issue of a document (e.g. a Supplemental Type Certificate or equivalent or document) issued by the State of Design of the person or organization responsible for the design of the modification. An applicant for a major modification should make a formal request to the Authority for approval to proceed with the proposed modification in accordance with data approved by the State of Design and acceptable to the Authority.

(2) The applicant for a major modification would make a formal request to the Authority on TTCAA Form TF-059 (Appendix 2). The modification package shall include all supporting data from the State of Design that must show compliance with the regulations and show how the following items are satisfied. If an item is not required the applicant shall show that consideration has been given to the following and make a statement with respect to applicability.

(a) Reason for the modification; (briefly state the reason)

(b) Detailed description of the proposed modification;

(c) A master drawing list detailing the individual drawings and specifications which define the modification;

(d) *Drawings and instructions necessary for the installation of the modification;

(e) Stress analysis;

(f) Power supplies;

(g) Cooling Requirements;

(h) Aerial positions;

(i) Circuit breakers/fuses (system, load, location and bus bar);

(j) *Equipment/Component listing (include Type approval and approval number/class);

(k) Equipment lighting;

(l) Effects on other aircraft systems;

(m) Interface;

(n) Cockpit notices, labels and required placards;

(o) Modification procedures and accomplishment instructions;

(p) Compatability with other embodied repairs/modifications;

(q) Submission of approved Maintenance Schedule amendment;

(r) Testing procedures or methods to meet certification and operating rules, such as flammability, carbon monoxide, and noise requirements;

(s) Test procedures, to ensure that they include all tests necessary to substantiate that the modification meets applicable certification requirements and are appropriate to the modification;

(t) *Flight test requirements: Performance and handling test requirements/flight test of radios:

(u) Detailed design standards, to ensure that the operator has considered all applicable design standards and has engineering reports which contain the analyses, calculations and test results used to determine that the modified product complies with the approval basis;

(v) A record of the change in mass and moment arm when the modification is installed in the aeronautical product;

(w) A record of the change in electrical load when the modification is installed in an aircraft;

(x) A supplement to the approved flight manual;

(y) *Supplements to affected manuals such as:

(i) Maintenance instructions;

(ii) Instructions for continuing airworthiness;

(iii) Repair instructions;

(iv) Any other aircraft manual;

(z) Any other factors affecting safety or airworthiness;

Note: *Copies of documents annotated * should, where applicable, accompany the modification submission to support it. Additional supporting information may be required in the form of TSO and general build specification.*

Review of Data by TTCAA

2. On receipt of the formal application, the TTCAA will-

(a) Review the description of the proposed modification to ensure that it correctly and accurately describes the modification;

(b) Review and evaluate the documents for completeness before the operator starts the actual work; if data is not complete, the operator will be required to supply any additional information needed by the Authority;

(c) Evaluate the proposal to determine whether the applicant has conducted a conformity evaluation to ensure that the proposed modification will not impact the airworthiness of the aircraft. The applicant will provide verification that he has inspected the aircraft and reviewed aircraft records to ensure compatibility of this modification with previously approved modifications or repairs (See Section 2 of this TAC);

(d) If the applicant employs an appropriately qualified aircraft engineer specialist (eg. an FAA-DER or equivalent) authorized by the Authority to provide supporting data approved by the State of Design for acceptance by the Authority, then the TTCAA will coordinate activities with both the applicant and the authorized aircraft engineer specialist.

Acceptance for Data Only

3. (1) The TTCAA will need to be satisfied that -

(a) The proposed modification has no unsafe features;

(b) Documentation includes data to ensure continued airworthiness and an appropriate amendment system;

(c) The applicant has met the requirements for the provision of approved data and documentation from the State of Design; and

(d) The applicant is properly authorized to perform the modification in accordance with the approved data and the conditions of his operations specifications.

(2) When the TTCAA determines that all the conditions are met, the AWI will -

(a) Record data acceptance in block 16 of Form TF-059 by ticking the "DATA ACCEPTED" box;

(b) Return one copy of Form TF-059 to the applicant allowing the applicant to proceed with the proposed modification.

This page intentionally left blank

SECTION 4

APPROVAL OF REPAIRS

General

1. (1) A repair is intended to restore an aeronautical product to an airworthy condition after it has been damaged or subjected to wear. The repair must be appropriately designed and installed to ensure restoration of the type design characteristics. All the criteria applicable for a modification listed in section 2 and 3 above shall be considered (as appropriate) when a repair is submitted for approval.

(2) Where a repair design is intended to correct damage to an aeronautical product, the design is generally unique to the specific unit damaged. Approval may be granted for a number of units where the damage to each is such that a common repair design is applicable. A repair design may be approved for all units of a given type of aeronautical product.

(3) The applicant for a major repair would make a formal request to the Authority on TTCAA Form TF-059, completed in duplicate, with the relevant blocks completed. The repair documents and approved data must show compliance with the approval basis of the aeronautical product. To ensure compliance with the approval basis of the aeronautical product, all applicable factors included in the original approval of the product must be addressed. This may require reference to the original type design holder. In addition to the applicable considerations for a modification, when preparing a major repair, the following are some areas for which the required compliance must be shown:

(a) Static and fatigue strength of structure;

(b) Whether structure is safe-life, fail-safe or damage tolerant;

(c) Corrosion protection;

(d) Mass and balance (for the aircraft overall or for balanced flight control surfaces);

(e) Flammability standards;

(f) Access and inspectability requirements;

(g) Electromagnetic interference (EMI) protection;

(h) Electrical conductivity (lightning strike);

(i) Colour and reflectance (i.e. ultraviolet absorption, thermal radiation);

(j) Process specifications (nitriding, etc.);

(k) Environmental standards (noise, smoke and gaseous emissions); and

(l) Failure modes and effects analysis.

Procedures

2. (1) A major repair to an aeronautical product must be accomplished in accordance with design data approved by, or acceptable to the Authority. In this regard the applicant shall ensure that the repair has been approved by the airworthiness authority of the State of Design directly or by delegation.

(2) In the case where a repair is not already approved or accepted, the following activities are required to be performed by, or on behalf of, the applicant by a person or organization acceptable to the Authority:

(a) Conduct all analyses, calculations and tests necessary to demonstrate compliance with the applicable airworthiness and environmental standards;

(b) Prepare all necessary documentation;

(c) Determine that the design can be installed in the product in conformity with the drawings and instructions; and

(d) Ensure that adequate instructions are provided for the continuing airworthiness of the aeronautical product. e.g. maintenance programme amendments.

(e) Being satisfied the operator shall submit the formal application on Form TF 059.

Documentation

3. The required documentation would include:

(a) Compliance programme;

(b) Master drawing or drawing list, production drawings, installation instructions;

(c) Engineering reports (static strength, fatigue, damage tolerance, fault analysis, etc.);

(d) Flight test programme and results;

(e) Mass and moment change data;

(f) Maintenance and repair manual supplements;

(g) Instructions for continuing airworthiness; and

(h) Flight manual supplement.

Structural Repairs

4. (1) The following guideline are applicable when considering repairs. The design of repairs for structural components must take into consideration the nature of the structure involved. Three different structural philosophies have been used in the design of aircraft structures which are in service at present. These are discussed as follows:

(a) **Safe-life** is a term applied to a structure that has been evaluated as being able to withstand the repeated loads of variable magnitude expected during its service life without detectable cracks. Safe-life structure often has a non-redundant arrangement of load-carrying members. Because failures of elements of this type of structure can be critical to the safety of the aircraft, fatigue life limits are carefully determined and it is mandatory to remove safe-life components from service when the life limits are reached. Because configuration changes can drastically affect fatigue life, the repair of a safe-life component necessitates that the remaining life be re-established and approved by, or on behalf of, the airworthiness authority. In most cases this task should not be attempted without the assistance of the organization having responsibility for the type design.

(b) **Fail-safe** is a term applied to a structure that has been evaluated to ensure that catastrophic failure is not probable after fatigue failure or obvious partial failure of a single, principal structural element. A fail-safe structure is characterized by multiple or redundant load paths. Considerations which should be addressed in the design and substantiation of repairs to fail-safe structure include:

(i) The static strength must be shown to be adequate after failure of single neighbouring structural elements, i.e. fail-safe design cases must be considered;

(ii) Fail-safe design features must not be compromised (e.g. integrity of crack stoppers must be maintained);

(iii) Inspectability must be maintained or, alternatively, appropriate nondestructive inspection procedures introduced;

(iv) Good detail design should be employed to reduce, to the extent possible, the introduction of stress raisers leading to premature fatigue cracking of the repair or the surrounding area; and

(v) The structural inspection intervals for the area repaired should be re-assessed to determine whether they should be shortened to account for possible fatigue life reduction resulting from the repair.

(c) **Damage tolerant** is a term applied to a structure that has been evaluated to ensure that should serious fatigue, corrosion, or accidental damage occur within the operational life of the aircraft, the remaining structure can withstand reasonable loads without failure or excessive structural deformation until the damage is detected. Characteristics are often, but not always, found in a damage tolerant structure include multiple or redundant load paths, materials with slow crack growth rates, ability to withstand relatively long cracks before unstable crack growth occurs, and design for good inspectability. An effective structural inspection programme is an essential element of damage tolerant design and must be developed to permit adequate opportunity to detect damage in principal structural elements before such damage becomes critical.

(2) Substantiation of a repair to a damage tolerant structure requires that a damage tolerance evaluation be performed in addition to a static strength substantiation. The damage tolerance evaluation requires a determination of the probable location and modes of damage due to fatigue, corrosion and accidental damage. Fatigue initiation thresholds and crack propagation rates must be established. Inspection methods, thresholds and frequencies must be defined such that the residual strength of the repaired structure at any time during the operational life of the aircraft is sufficient to withstand the damage tolerance load cases listed in the applicable design requirements. The aircraft damage tolerance documentation must be revised to reflect new inspection methods, thresholds and frequencies established for the repaired structure and the revisions approved by, or on behalf of, the airworthiness authority. A damage tolerance assessment should not normally be attempted without the assistance of the organization having responsibility for the type design.

Service Limitations For Repairs

5. Pending the completion of a permanent repair, it is occasionally necessary to restore a damaged aeronautical product. Such a repair may be permissible under controlled operating conditions and subject to the approval of the airworthiness authority of the State of Design. Two categories in which service limitations apply are described as follows:

(a) **Interim repairs** are deemed to comply with applicable design standards at the time of their implementation and for a limited time thereafter as determined by the State of Design. However, they may be subject to long-term effects which in time would compromise their compliance with regulatory requirements. An example of an interim repair is a structural repair which has been shown to have adequate static strength, but which has not been substantiated for damage tolerance requirements. In such a case a two-stage evaluation may be acceptable, as follows:

(i) A static structural strength evaluation is made prior to release of the aircraft into service with a stated time for completion of the damage tolerance evaluation; and

(ii) A damage tolerance evaluation of the repair is made within the prescribed time period after this interim release.

(b) **Temporary repairs** do not fully restore damaged components to compliance with applicable regulatory requirements, but instead restore the aircraft to a condition acceptable for ferry flight, with appropriate restrictions, to a maintenance base for permanent repair.

Review of Data by TTCAA

6. On receipt of the formal application, the AWI will-

(a) Review the description of the proposed major repair to ensure that it correctly and accurately describes the repair;

(b) Review and evaluate the documents for completeness before the operator starts the actual work; if data is not complete, the operator will be required to supply any additional information needed by the Authority;

(c) Evaluate the proposal to determine whether the applicant has conducted a conformity evaluation to ensure that the proposed repair will not impact the airworthiness of the aircraft. The applicant will provide verification that he has inspected the aircraft and reviewed aircraft records to ensure compatibility of this repair with previously approved repairs or modifications (See Section 2 of this TAC);

(d) If the applicant employs an appropriately qualified aircraft engineer specialist (eg. an FAA-DER or equivalent) authorized by the Authority to provide supporting data approved by the State of Design for acceptance by the Authority, then the AWI of the TTCAA will coordinate activities with both the applicant and the authorized aircraft engineer specialist.

Acceptance for Data Only

7. (1) The AWI will need to be satisfied that -

(a) The proposed major repair has no unsafe features;

(b) The applicant has met the requirements for the provision of engineering data and documentation from the State of Design; and

(c) The applicant is properly authorized to perform the major repair in accordance with the approved data and the conditions of his operations specifications;

(2) When the AWI determines that all the conditions are met, he will -

(a) Record data acceptance in block 16 of Form TF-059 by ticking the “DATA ACCEPTED” box;

(b) Return one copy of Form TF-059 to the applicant allowing the applicant to proceed with the purposed major repair.

Use Of Form TF-035 To Show Completion Of Repair

8. Upon completion of a major repair, the details of the major repair must be entered in TTCAA form TF-035 by the person who performed the major repair in accordance with the instructions at Appendix 4. A copy of the completed form TF-035 shall be kept by the operator available for inspection by the TTCAA.

_____

Ramesh Lutchmedial
Director General of Civil Aviation

This page intentionally left blank

APPENDIX 1

CRITERIA FOR THE CLASSIFICATION OF MAJOR AND MINOR MODIFICATIONS AND REPAIRS

General

1. The following criteria outline the decisions needed in assessing a modification or repair as major or minor. For each issue, it must be determined whether or not the proposed change will have other than a negligible effect. The questions require "yes" or "no" responses. An affirmative answer to any individual question indicates that the modification or repair should be classified as major. The examples and tests listed are for illustration only and not intended to be all-encompassing.

CRITERIA

General

2. Is the change being accomplished as an alternative means of compliance with an airworthiness directive or equivalent?

Mass And Balance

3. (1) Does the change involve a revision in the approved mass limitations or centre of gravity range limits?

(2) Does the change require the installation of ballast or use of other methods to maintain the centre of gravity within the approved limits?

Performance And Flight Characteristics

4. Does the change involve modifications to the configuration of the aircraft which may:

(a) Increase drag;

(b) Alter the thrust or power;

(c) Affect stability or controllability;

(d) Induce flutter or vibration; or

(e) Alter the stalling characteristics to an extent which necessitates analysis or test?

Structural Strength

5. (1) Does the change involve a principal component of the aircraft structure such as a frame, stringer, rib, spar or stressed skin?

(2) Does the change involve a structural element which is addressed as part of a damage tolerance or fatigue/failsafe evaluation?

(3) Is a pressure vessel penetration or change involved?

(4) Does the change involve the installation of an item of mass necessitating structural re-evaluation?

(5) Does the change involve the installation or modification of a containment or restraint system intended for the stowage of items of significant mass?

(6) Does the change involve repairs or modifications to the load-bearing structure of seats, harnesses or their means of attachment or any other occupant restraint equipment?

(7) Does the change involve the substitution of materials?

Powerplant Operation

6. Does the change significantly affect the powerplant or propeller or their accessories?

Other Qualities Affecting Airworthiness

7. (1) Does the change involve equipment for which there is no performance standard which has been approved or accepted by the airworthiness authority?

(2) Does the change affect the probability of failure conditions that could impair or preclude continued safe flight or landing?

(3) Does the change affect the pilot's visibility or impair the pilot's capability to control the aircraft?

(4) Does the change involve modifications to the interior arrangement or cabin materials?

(5) Does the change involve systems for cabin pressurization or the provision of breathing oxygen?

(6) Does the change involve flight controls or an autopilot?

(7) Does the change involve critical or essential components of the electrical system such as generators, alternators, inverters, batteries, distribution buses, or bus protection and control devices?

(8) Does the change affect instruments or indicators or their subsystems that provide navigation information?

(9) Does the change affect instruments, indicators or their subsystems that provide essential or critical information concerning the aircraft status?

(10) Does the change affect a regulated placard?

(11) Does the change affect any approved information contained in the flight manual or equivalent document?

Other Qualities Affecting Environmental Characteristics

8. Does the change alter the aircraft noise or emission characteristics?

Non-Standard Practices

9. Does the change involve practices or techniques which are novel or unproven (not accomplished by standard maintenance practices) in the proposed application?

APPENDIX 2

REQUEST FOR MAJOR MODIFICATION AND REPAIR DATA APPROVAL

1. COMPANY NAME AND ADDRESS:	2. COMPANY APPROVAL NO:
	3. ☐ MODIFICATION or ☐REPAIR (Tick applicable box)
	4. ENGINEERING ORDER NUMBER:
5. A/C TYPE:	6. REGISTRATION NO.:

7. Reason For ☐MODIFICATION or ☐REPAIR:

8.Details of ☐MODIFICATION or ☐REPAIR

9. Master Drawing Reference	10. All Drawings Attached ☐ Yes ☐ No
11. Is Flight Manual Affected? ☐ Yes ☐ No	If Yes, is Supplement Attached? ☐ Yes ☐ No
12. Design Authority Responsible: (Major Aircraft Manufacturer) ☐ FAA ☐ JAA ☐ TC ☐ UKCAA	
13. List Manuals Affected:	
14. Page 2 Completed? ☐ Yes ☐ No	Are all supporting Documents attached? ☐ Yes ☐ No

15. FOR AND ON BEHALF OF (Company Name)_____

Name:_____ Signature:_____ Date:_____

FOR TTCAA USE ONLY

16. **DATA ACCEPTED** ☐ TTCAA Approval Number:	**DATA NOT ACCEPTED** ☐
LIMITATIONS	**Reasons for non-acceptance:**

NAME:_____ SIGNATURE:_____ DATE:_____

17. Additional sheets attached NO ☐ YES ☐ Number of additional sheets _____

TF-059 **Page 1 of 3**

APPENDIX 2

In making this application the applicability of items on this table has been assessed and appropriately addressed.

18. **Detailed Description: e.g.** This Modification requires the removal of all the Main Cabin Interior Sidewalls the insulation Blankets and replacing these with the new and improved Material that satisfies FAA AD XX2-2004
19. **Instructions Necessary For Installation:** All necessary instructions are contained within the engineering order only.
20. **Stress Analysis:** Applicable Documentation Attached, analysis completed and found satisfactory
21. **Power Supplies:** The Buss Bar requirements have been addressed – See Electrical Load Analysis
22. **Cooling Requirements:** This is Inspected and Current System is Acceptable
23. **Aerial Position:** These have been relocated as per Drawings and Manuals Attached
24. **Fuses:** All required Fuses/CB etc are shown in the engineering order
25. **Component Listing:** Not Affected
26. **Equipment Lighting:** This is on Page 2 of E.O.
27. **Effects on other System:** This has been confirmed Ok
28. **Interface:** None Affected
29. **Crew Notices/Placards**: Issued
30. **Modification Procedure:** MPM and MCM amended to take in consideration the change. See Pages added
31. **Compatibility With Other Mods/Repairs:** Checked OK.
32. **The Maintenance Schedule is affected: Yes,** see revision submission of the Maintenance Schedule:-
33. **Tests:** All tests to be done as per sheet 9 of E.O.
34. **Flight Tests:** These changes require two Flight Tests. The first shall be at least 3 hours and the second a verification check for 1 hour maximum
35. **Other Details:** The following are attached and considered necessary for the approval process. A foreign flight crew would be used in this First time installation and the results of the testing would be provided to the manufacturers and TTCAA for follow up action as deemed necessary.

TF-059 **Page 2 of 3**

APPENDIX 2

The following are instructions for completing Form TF-059. The numbers correspond to the numbers on the form:

1. Enter the company Name and Address
2. Enter the company Approval Number or Certificate Number
3. Tick appropriate box
4. Record the engineering order number.
5. Record the aircraft type.
6. Enter aircraft registration number.
7. Enter the reason for the Modification or repair.
8. Provide a detailed description of the repair or Mod.
9. Give the Master drawing reference.
10. List all relevant controlling drawing or 8110-3.
11. Indicate the effect on the Flight Manual.
12. Indicate the State of design which has provided approval for the design change or repair, such as FAA, JAA etc.
13. List the other manuals that are affected, and may required supplements or amendments, and indicate when these changes are to be implemented.
14. Indicate that Page 2. is properly addressed.
15. Designated company representative shall record name, sign and date.
16. For use by TTCAA only.
17. Number of sheets used.
18. Items 18-35 have been filled in as an example to indicate an acceptable method when a submission is made to the TTCAA. Each operator must address each item to indicate that all the listed factors have been considered as a minimum, and are included as appropriate.

TF-059 **Page 3 of 3**

This page intentionally left blank

MAJOR REPAIR AND MODIFICATION
(Aircraft and Aeronautical Products)

Trinidad & Tobago Civil Aviation Authority

TCAA APP No.

Reference: Civil Aviation [(No. 5) Airworthiness] Regulations, 2004. **INSTRUCTIONS: Print or type all entries.**

1. Aircraft	**Make:**	**Model:**
	Serial Number:	**Nationality and Registration Mark:**
2. Owner	**Name (As shown on registration certificate):**	**Address (As shown on registration certificate):**

3. For TTCAA Use Only

4. Unit Identification				**5. Type**	
Unit	**Make**	**Model**	**Serial Number**	**Repair**	**Modification**
Airframe					
Power plant					
Propeller					
Appliance	**Type**				
	Manufacture				

6. Conformity Statement

A. Organization Name and Address	**B. Kind of License or Organization**	**C. Certificate or License Number**
	☐ Licensed (AME) ☐ A ☐ P or ☐ A/P	(For an AMO include the appropriate ratings issued for the major repair or modification)
	☐ Approved Maintenance Organization	
	☐ Manufacturer	

D. I hereby certify that the repair or modification made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of the Civil Aviation [(No. 5) Airworthiness] Regulations, 2004 and that the information furnished herein is true and correct to the best of my knowledge.

Date:	**Signature of Authorized Person:**

7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit(s) identified in item 4 was inspected in the manner prescribed by the Authority and is ☐ APPROVED ☐ REJECTED

BY	☐ Maintenance Organization	☐ Inspection Authorization	☐ Other	**Other (Specify)**

Date of Approval or Rejection:	**Licence or Certificate:**	**Signature of Authorized Person:**

NOTICE

Mass and balance or operating limitation changes shall be entered in the appropriate aircraft record. A modification must be compatible with all previous modifications to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify each page with aircraft nationality and registration mark and date work completed.)

APPENDIX 4

INSTRUCTIONS FOR COMPLETING TTCAA FORM TF-035

1. This Appendix to TAC-023A provides instructions for completing Trinidad and Tobago Civil Aviation Authority (TTCAA) Form TF-035, Major Repair and Modification (Aircraft and Aeronautical Products).

2. TTCAA Form TF-035 serves two main purposes: one is to provide aircraft owners and operators with a record of major repairs or modifications indicating details and approval, and other to provide the TTCAA with a copy of the form for inclusion in the aircraft records at the TTCAA.

3. The person who performs or supervises a major modification or major repair should prepare TTCAA Form TF-035. The form is executed at least in duplicate and is used to record major modifications and major repairs made to an aircraft, an airframe, powerplant, propeller, appliance, or spare part. The following instructions apply to corresponding items 1 through 8 of the form as illustrated in Appendix 3:

(a) **Item 1- Aircraft.** Information to complete the "Make," "Model," and "Serial Number" blocks will be found on the aircraft manufacturer's identification plate. The "Nationality and Registration Mark" is the same as shown on the Certificate of Aircraft Registration;

(b) **Item 2 - Owner.** Enter the aircraft owner's complete name and address as shown on the Certificate of Aircraft Registration;

Note: *When a major modification or major repair is made to a spare part or appliance, items 1 and 2 will be left blank, and the original and duplicate copy of the form will remain with the part until such time as it is installed on an aircraft. The person installing the part will then enter the required information in blocks 1 and 2, give the original of the form to the aircraft owner/operator, and forward the duplicate copy to the TTCAA within 48 hours after the work is inspected.*

(c) **Item 3 - For TTCAA Use Only.** This section of the form is used by the TTCAA as a record of the modification status of the Aircraft or aeronautical product only. A record of **all** major repairs and or modifications must be copied to the TTCAA upon embodiment. This includes modifications and or repairs which were accomplished in accordance with an Airworthiness Directive or other State of Design approved data.

(d) **Item 4 - Unit Identification.** The information blocks under item 4 are used to identify the airframe, powerplant, propeller, or component modified or repaired. It is only necessary to complete the blocks for the unit modified or repaired;

(e) **Item 5 - Type.** Tick the appropriate column to indicate a modification modified or repair;

(f) **Item 6 - Conformity Statement;**

(i) **"A" - Organization's Name and Address.** Enter name of the maintenance engineer, AMO, or manufacturer accomplishing the modification or repair. A maintenance engineer should enter his name and permanent mailing address. Manufacturers and AMOs should enter the name and address under which they do business;

(ii) **"B" - Kind of Licence of Organization.** Tick the appropriate box to indicate the type of person or organization who performed the work;

(iii) **"C" – Certificate or Licence Number.** A maintenance engineer should enter his licence number in this block. An AMO should enter its approved maintenance organization certificate number and the rating or ratings under which the work was performed. A manufacturer should enter his type production or Supplemental Type Certificate (STC) number. A manufacturer of Technical Standard Orders (TSO) appliances modifying these appliances should enter the TSO number of the component modified.

(iv) **"D" - Compliance Statement:** This space is used to certify that the modification or repair was made in accordance with the TTCAR. When work was performed or supervised by a licensed maintenance engineer not employed by a manufacturer or AMO, he should enter the date the modification or repair was completed and sign his full name. An AMO is permitted to authorize persons in its employ to date and sign this conformity statement;

(g) **Item 7 - Approval for Return to Service.** TTCAR No.5 establishes the conditions under which major modifications or repairs to airframes, powerplants, propellers, and/or appliances may be approved for return to service. This portion of the form is used to indicate approval or rejection of the modification or repair of the unit involved and to identify the person or organization making the airworthiness inspection. The "approved" or "rejected" box is ticked to indicate the finding. Additionally, tick the appropriate box to indicate who made the finding. Use the box labelled "other" to indicate a finding by a person other than those listed. Enter the date the finding was made. The authorized person who made the finding should sign the form and enter the appropriate certificate or designation number;

(h) **Item 8 - Description of Work Accomplished.** A clear, concise, and legible statement describing the work accomplished should be entered in item 8 on the reverse side of TTCAA Form TF-035. It is important that the location of the modification or repair, relative to the aircraft or component, be described. The approved technical data, accepted by the Authority, used as the basis for certifying the major modification or major repair for return to service should be identified and described as follows:

(i) Data used as a basis for approving major repairs or modifications for return to service must be Acceptable to the Authority, this includes: Airworthiness directives, manufacturer's instructions approved by the State of Design, kits and service handbooks, type certificate data sheets, and aircraft specifications. Other forms of approved data would be those approved by a designated engineering representative employed by a Manufacturer of an aeronautical product and acceptable to the Authority (DER or equivalent), a manufacturer holding a delegation option authorization (DOA), STCs. Form TF035 when completed and submitted shall form part of the permanent records of the aircraft or aeronautical product.

(ii) Alternatively, details of the data used for the modification or repair may be presented on attached sheets and a concise listing of each attached sheet

included in this block together with a clear concise and legible statement describing the work carried out with proper cross references to the applicable sections of the approved technical data used;

(iv) If the modification or repair is to be covered by other structure or skin, then a statement should be made certifying that a pre-cover inspection was carried out and the work completed was found satisfactory;

(v) If additional space is needed to describe the modification or repair, attach sheets bearing the aircraft nationality and registration mark and the date work was completed;

(vi) Showing mass and balance computations under this item is not required; however, it may be done. In all cases where mass and balance of the aircraft are affected, the changes should be entered in the aircraft mass and balance records with the date, signature, and reference to the work performed on the TTCAA Form TF-035 that required the changes.

ADMINISTRATIVE PROCESSING

4. At least an original and one duplicate copy of the TTCAA Form TF-035 will be executed. The forms will be completed as instructed in this AC ensuring that item 7, "Approval for Return to Service," has been properly executed. The original of the form should be given to the aircraft owner or operator, and the duplicate copy sent to the TTCAA within 48 hours after the work is inspected.

(a) **Signatures on TTCAA Form TF-035** have limited purposes:

(i) A signature in item 6, "Conformity Statement," is a certification by the person performing the work that it was accomplished in accordance with applicable TTCARs and TTCAA-accepted/approved data. The certification is only applicable to that work described under item 8 on the reverse of TTCAA Form TF-035;

Note: *Neither of these signatures (subparagraph c(i) and c(ii)) indicates TTCAA approval of the work described under item 8 for return to service.*

(b) TTCAA Form TF-035 is not authorized for use on other than Trinidad and Tobago registered aircraft. If a foreign civil air authority requests the form, as a record of work performed, it may be provided. The form should be executed in accordance with the TTCAR and this TAC.