



AIRWORTHINESS

ADVISORY

CIRCULAR

CIVIL AVIATION AUTHORITY OF BOTSWANA

CAAB Document AAC-009

DEVELOPMENT OF AIRCRAFT MAINTENANCE PROGRAMS

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1. PURPOSE

This Airworthiness Advisory Circular (AAC) provides information and guidance on the regulatory requirements relating to the preparation of a maintenance program. It provides general information and explains procedures that would guide an operator to prepare an acceptable aircraft Maintenance Program as required by Regulation 33 of the Civil Aviation (Airworthiness) Regulations.

2. STATUS OF THIS ADVISORY CIRCULAR

This Airworthiness Advisory Circular is an original issuance.

3. EFFECTIVE DATE

This AAC becomes effective immediately. It repeals Aeronautical Engineering Notice (AEN) No. 42, Issue 2 dated 28 April 2010.

4. APPLICABILITY

This guidance is applicable to all operators of Botswana registered aircraft for which a Maintenance Program is required.

5. RELATED REGULATIONS

Copies may be obtained from the Government Printer.

- Civil Aviation (Airworthiness) Regulations
- Civil Aviation (Air Operator Certification and Administration) Regulations

6. RELATED PUBLICATIONS

For further information on this subject, operators are advised to review the following ICAO publications -

Copies may be obtained from Document Sales Unit, ICAO, 999 University Street, Montreal, Quebec, Canada H3C 5H7.

- Annex 6 – Operation of Aircraft
- Annex 8 - Airworthiness of Aircraft
- Doc 9760 - Airworthiness Manual

7. DEFINITIONS AND ACRONYMS

7.1 The following definitions are used in this advisory circular:

Competent Authority. The regulatory Authority responsible for approving an aircraft maintenance program.

Maintenance Program. The term “*Maintenance Program*” is intended to include scheduled maintenance tasks, the associated procedures and standard maintenance practices.

Maintenance Schedule. The term “*Maintenance Schedule*” is intended to embrace the scheduled maintenance tasks alone.

7.2 The following acronyms are used in this circular

AD Airworthiness Directive

Advisory Circulars (ACs) are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material. Where a regulation contains the words “prescribed by the Authority,” the AC may be considered to prescribe a viable method of compliance, but status of that “prescription” is always “guidance” (never regulation).

CAAB	Civil Aviation Authority of Botswana (“Authority”)
CMR	Certification Maintenance Requirement
ICAO	International Civil Aviation Organization
MPD	Maintenance Planning Document
MRB	Maintenance Review Board
MSG	Maintenance Steering Group
SB	Service Bulletin
SSID	Supplemental Structural Inspection Program
STC	Supplemental Type Certificate
TC	Type Certificate
TCDS	Type Certificate Data Sheet

8. BACKGROUND

8.1 Regulation 33 of the Civil Aviation (Airworthiness) Regulations requires every aircraft to be maintained in accordance with a Maintenance Program approved by the CAAB. Any subsequent amendments to the Maintenance Program should be approved by the CAAB.

8.2 The Maintenance Program must establish compliance with:

- (a) Instructions for continuing airworthiness issued by the Type Certificate (TC) and the supplemental Type Certificate (STC) holders and any other organization that publishes such data in accordance with the Civil Aviation Regulations, or
- (b) Instructions issued by the CAAB, if they differ from subparagraph 8.2(a) or in the absence of specific recommendations, or
- (c) Instructions defined by the owner or the operator and approved by the competent authority if they differ from subparagraphs 1 and 2.
- (d) The Maintenance Program shall contain details, including frequency, of all maintenance to be carried out, including any specific tasks linked to specific operations. The program must include a Reliability Program when the Maintenance Program is based:
 - (1) On Maintenance Steering Group logic, or;
 - (2) Mainly on condition monitoring.

9. MAINTENANCE PROGRAM REQUIREMENTS

9.1 An aircraft should only be maintained to one approved Maintenance Program at a given point in time. Where an owner or operator wishes to change from one approved program to other, a transfer check or inspection may need to be performed in order to implement the change.

- 9.2 The Maintenance Program details should be reviewed at least annually. As a minimum revisions of documents affecting the program basis need to be considered by the owner or operator for inclusion in the Maintenance Program during the annual review. Applicable mandatory requirements for compliance with the requirements of the Authority shall be incorporated into the owner or operator's Maintenance Program as soon as possible.
- 9.3 The aircraft Maintenance Program should contain a preface which will define its contents, the inspection standards to be applied, permitted variations to task frequencies and where applicable, any procedure to manage the evolution of established check or inspection intervals.
- 9.4 The approved aircraft Maintenance Program should reflect applicable mandatory regulatory requirements addressed in documents issued by the TC holder.
- 9.5 Repetitive maintenance tasks derived from modifications and repairs should be incorporated into the approved Maintenance Program

10. MAINTENANCE PROGRAM COMPLIANCE

- 10.1 An owner or operator's Maintenance Program should normally be based upon the Maintenance Review Board (MRB) report where applicable, the Maintenance Planning Document (MPD), the relevant chapters of the maintenance manual or any other maintenance data containing information on scheduling. Furthermore, an owner or operator's Maintenance Program should also take into account any maintenance data containing information on scheduling for components.
- 10.2 Instructions issued by the competent authority can encompass all types of instructions from a specific task for a particular aircraft to complete recommended maintenance schedules for certain aircraft types that can be used by the owner/operator directly.
- 10.3 Where an aircraft type has been subjected to the MRB report process, an operator should normally develop the initial operator's aircraft Maintenance Program based upon the MRB report.
- 10.4 Where an aircraft is maintained in accordance with an aircraft Maintenance Program based upon the MRB report process, any associated program for the continuous surveillance of the reliability, or health monitoring of the aircraft should be considered as part of the aircraft Maintenance Program.
- 10.5 Aircraft Maintenance Programs for aircraft types subjected to the MRB report process should contain identification cross reference to the MRB report tasks such that it is always possible to relate such tasks to the current approved aircraft Maintenance Program. This does not prevent the approved aircraft Maintenance Program from being developed in the light of service experience beyond the MRB report recommendations but will show the relationship to such recommendations.
- 10.6 Aircraft Maintenance Programs not developed from the MRB process can utilize Reliability Programs. Such Reliability Programs should be considered as a part of the approved Maintenance Program.

11. CONTENT OF THE MAINTENANCE PROGRAM

11.1 General Requirements

The Maintenance Program should contain the following basic information:

- 11.1.1 The type/model and registration number of the aircraft, engines and, where applicable, auxiliary power units and propellers.
- 11.1.2 The name and address of the owner, or operator
- 11.1.3 The reference, the date of issue and issue number of the approved Maintenance Program.
- 11.1.4 A statement signed by the owner, operator to the effect that the specified aircraft will be maintained to the program and that the program will be reviewed and updated as required.
- 11.1.5 Contents/list of effective pages and their revision status of the document.
- 11.1.6 Check periods, which reflect the anticipated utilization of the aircraft. Such utilization should be stated and include a tolerance of not more than 25%. Where utilization cannot be anticipated, calendar time limits should also be included.
- 11.1.7 Procedures for escalation of established check periods, where applicable and acceptable to the competent authority of registry.
- 11.1.8 Provision to record the date and reference of approved amendments incorporated in the Maintenance Program.
- 11.1.9 Details of pre-flight maintenance tasks that are accomplished by maintenance staff.
- 11.1.10 The tasks and the periods (intervals/frequencies) at which each part of the aircraft, engines, APUs, propellers, components, accessories, equipment, instruments, electrical and radio apparatus, together with the associated systems and installations should be inspected. This should include the type and degree of inspection required.
- 11.1.11 The periods at which components should be checked, cleaned, lubricated, replenished, adjusted and tested.
- 11.1.12 If applicable details of ageing aircraft system requirements together with any specified sampling programs.
- 11.1.13 If applicable details of specific structural maintenance programs where issued by the Type Certificate holder including but not limited to:
 - (a) Maintenance of structural Integrity by damage Tolerance and Supplemental Structural Inspection Programs (SSID).
 - (b) Structural Maintenance Programs resulting from the SB review performed by the TC holder.
 - (c) Corrosion Prevention and Control Program.
 - (d) Repair Assessment.

(e) Widespread Fatigue Damage

- 11.1.14 If applicable a statement of the limit of validity in terms of total flight cycles/calendar date/flight hours for the structural program in 11.1.13.
- 11.1.15 The periods at which overhauls and/or replacements by new or overhauled components should be made.
- 11.1.16 A cross-reference to other documents approved by the Authority which contain the details of maintenance tasks related to mandatory life limitations, Certification Maintenance Requirements (CMRs) and ADs.

Note: To prevent inadvertent variations to such tasks or intervals these items should not be included in the main portion of the Maintenance Program document, or any planning control system, without specific identification of their mandatory status.

- 11.1.17 Details of, or cross-reference to, any required Reliability Program or statistical methods of continuous Surveillance.
- 11.1.18 A statement confirming that practices and procedures to satisfy the program are to the standards specified in the TC holder's Maintenance Instructions. In the case of approved practices and procedures that differ, the statement should refer to them.
- 11.1.19 Each maintenance task quoted should be defined in a definition section of the program.

11.2 Program Basis

- 11.2.1 An aircraft Maintenance Program should normally be based upon the MRB report, where applicable, and the TC holder's Maintenance Planning Document or Chapter 5 of the maintenance manual, (i.e. the manufacturer's recommended maintenance schedule). The structure and format of these maintenance recommendations may be re-written by the owner to better suit the operation and control of the particular Maintenance Program.
- 11.2.2 For a newly type-certificated aircraft where no previously approved Maintenance Program exists, it will be necessary for the owner to comprehensively appraise the manufacturer's recommendations (and the MRB report where applicable), together with other airworthiness information, in order to produce a realistic program for approval.
- 11.2.3 For existing aircraft types, it is permissible for the operator to make comparisons with Maintenance Programs previously approved. It should not be assumed that a program approved for one owner would automatically be approved for another. Evaluation should be made of the aircraft/fleet utilization, landing rate, equipment fit and, in particular, the experience of the owner when assessing an existing program. Where the CAAB is not satisfied that the proposed Maintenance Program can be used as is, the CAAB will request appropriate changes such as additional maintenance tasks or de-escalation of check frequencies as necessary.

11.3 Amendments

Amendments (revisions) to the approved Maintenance Program should be made by the owner or operator, to reflect changes in the TC holder's recommendations, modifications, service experience, or as required by the CAAB.

11.4 Permitted Variations to Maintenance Periods

The owner or operator may only vary the periods prescribed by the program with the approval of the CAAB or through a procedure developed in the Maintenance Program and approved by the CAAB.

11.5 Periodic Review of Maintenance Program Contents

11.5.1 The owner or operator's approved Maintenance Programs should be subject to periodic review to ensure that they reflect current TC holder's recommendations, revisions to the MRB report if applicable, mandatory requirements and the maintenance needs of the aircraft.

11.5.2 The owner or operator should review the detailed requirements at least annually for continued validity in the light of operating experience.

11.6 Reliability Programs

Where the Reliability Program has been used as a reference material in the compiling of the Maintenance Program, it must be ensured that any amendments to the Reliability Program are taken into consideration in order to align the Maintenance Program accordingly.

12. APPROVAL OF MAINTENANCE PROGRAM

This Chapter describes the procedures for the approval of an operator's initial aircraft Maintenance Program, and its subsequent amendments.

12.1 Application for Initial Approval of the Maintenance Program

12.1.1 The following documents shall be submitted to the Authority :

- (a) The proposed Maintenance Program.
- (b) The proposed Reliability Program, as required.
- (c) Source documents (As applicable: TCDS, MRB report, MPD, Chapter 5 of the Maintenance Manual, Life limitations, Corrosion Prevention Control Program, Life Limitations, Certification Maintenance Requirements, etc.).
- (d) Design status (Type specification, AD status, modification and repair status) of each aircraft listed in the Maintenance Program.

12.1.2 Where the Maintenance Program differs from the Type Certificate (TC) Holder's recommendations, the Authority must be provided with the appropriate technical justifications for such differences, as shown in paragraph 12.1.3 below.

12.1.3 In relation to the above, differences from the original TC Holder's recommendation may consist of :

- (a) Addition of tasks.
- (b) Deletion of tasks.
- (c) Modification to tasks.
- (d) Change in tasks frequencies.

- 12.1.4 Where comparisons are made with Maintenance Program(s) previously approved, the following additional documents shall be submitted to the Authority :
- (a) The previously approved Maintenance Program.
 - (b) A detailed comparison between both fleet of aircraft, relevant to the Maintenance Program items concerned by the comparison, in terms of:
 - (i) Type of operation (long/short haul, ETOPS/non ETOPS, fleet utilization rate, climate environment, etc.)
 - (ii) Fleet technical standard (modification standard, customer options, TC variants, structural repairs, etc.).
 - (iii) Maintenance factors (aircraft age, applicable maintenance practices and procedures, Reliability Program, SB implementation policy, lubrication program, etc.).
- 12.1.5 When differences are shown in reference to paragraph 12.1.4 (b) above, such differences should be reflected in the operator's proposed Maintenance Program, and justification to the changes should be provided.

12.2 Initial Approval of the Maintenance Program

- 12.2.1 Upon receipt of the documents stipulated at paragraph 12.1.1 and where applicable, paragraph 12.1.4 documents, the CAAB inspector will review the proposed Maintenance Program in order to :
- (a) Establish compliance with the Maintenance Program content requirements as specified above.
 - (b) Establish compliance with the source documents and,
 - (c) Where the program deviates from the source document, ensure that the technical justifications provided by the Operator are appropriate.
- 12.2.2 Where relevant, the CAAB Inspector will also review the paragraph 12.1.4 documents and ensure that any differences arising from the paragraph 12.1.4 (b) comparison is properly reflected in the proposed Maintenance Program.
- 12.2.3 Once the CAAB Inspector is satisfied that compliance is established and/or that the technical justifications are appropriate, the CAAB will issue an approval of the Maintenance Program.
- 12.2.4 The CAAB will stamp and sign the Maintenance Program's list of effective pages. In addition, the Operator will be notified of the Maintenance Program approval through a letter of approval from the CAAB Flight Safety Directorate.
- 12.2.5 The Operator will be notified of the approval/non approval of the Maintenance Program by a letter within 60 days of receipt of the application.

12.3 Application for an Amendment to an Approved Maintenance Program

- 12.3.1 The Operator shall nominate a person who shall be responsible for the upkeep or control of the Maintenance Program, including ensuring that the program is suitably amended where applicable following the regular review.

12.3.2 A revision to a Maintenance Program may include:

- (a) Additions of tasks.
- (b) Deletions of tasks.
- (c) Modifications to tasks.
- (d) Changes in tasks frequencies.
- (e) Changes to the list of aircraft subject to the Maintenance Program.

12.3.3 The following documents should be submitted to the Authority :

- (a) The proposed revision to the Maintenance Program
- (b) Justification to every change, such as :
 - (i) Amendments to source documents (as applicable : TCDS, MRB report, MPD, Chapter 5 of the Maintenance Manual, Life limitations, Corrosion Prevention Control Program, Life Limitations, Certification Maintenance Requirements, etc.)
 - (ii) Modifications, including Service Bulletins, Airworthiness Directives; and repairs.
 - (iii) Data arising from the Reliability Program or the monitoring of the Maintenance Program effectiveness.
- (c) Where the amendment to the Maintenance Program results from an addition to the list of aircraft subject to the Maintenance Program, the design status of the additional aircraft (Type specification, AD status, modification and repair status) must also be submitted to the CAAB.

12.4 Approval of an Amendment to a Maintenance Program

12.4.1 Amendments to approved Maintenance Programs may only be approved when the CAAB is satisfied with the content or when the approval is obtained in accordance with CAAB approved procedures (see paragraph 12.5 below).

12.4.2 Upon receipt of the paragraph 12.3.3 documents, the CAAB Inspector will review the proposed revision to the Maintenance Program in order to establish compliance with the amended source documents and, in relation with paragraph 12.3.3(b)(iii) above that the technical justifications provided by the Operator are appropriate.

12.4.3 In relation to the paragraph 12.2.3(e) change to the list of aircraft, the CAAB Inspector will in addition ensure that any necessary additional maintenance tasks arising from specificity in the new aircraft design status have been taken into account in the Maintenance Program.

12.4.4 When the CAAB Inspector is satisfied that compliance is established and/or that the technical justifications are appropriate, the CAAB will issue an approval of the amended Maintenance Program.

12.4.5 Except as provided in paragraph 12.5 below, the CAAB will stamp and sign the Maintenance Program's list of effective pages. In addition, the Operator will be notified of the Maintenance Program approval through a letter of approval from the CAAB Flight Safety Directorate.


12.4.6 The CAAB approval/non approval of the amendment to the Maintenance Program will be notified to the operator within 60 days of receipt of the application.

12.5 Organisation approval for the approval of Maintenance Program amendments

12.5.1 Notwithstanding paragraph 12.3 and 12.4 above, an organisation may be approved to provide reports and certify that the content of the Maintenance Program amendment complies with the appropriate requirements.

12.5.2 Accordingly, the approval of the amendment to the Maintenance Program will be notified in accordance with the Operator's procedures.




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For/Civil Aviation Authority of Botswana

Date: 18/01/2013

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