
SUBJECT: AIRCRAFT MAINTENANCE PROGRAMME

DATE: 24/07/2015

1. OBJECTIVE

This Instruction provides information and guidance on development and submission for approval of an Aircraft Maintenance Programme required for an aircraft registered in a Cabo Verde and granted a Certificate of Airworthiness.

2. APPLICABILITY

2.1.1 This instruction is applicable to commercial air operators and aircraft maintenance organisations

3. REFERENCES

- CV-CAR 8, 9;
- ICAO Annex 6, Part I, Chapter 8 and chapter 11.3;
- ICAO Document 9760, Part III, Chapter 6.

4. DEFINITIONS

4.1.1 For the purpose of this instruction the following abbreviation shall apply:

- (1) **Airworthiness:** A condition in which the aircraft, airframe, engine, propeller, accessories, and appliances meet their type design and are in a condition for safe operation.
- (2) **Inspection:** The routine performance of inspection tasks at prescribed intervals. The inspection must ensure the airworthiness of an aircraft up to and including its overhaul or life limits.
- (3) **Scheduled (Routine) Maintenance:** The performance of maintenance tasks at prescribed intervals.
- (4) **Unscheduled (Non-Routine) Maintenance:** The performance of maintenance tasks when mechanical irregularities occur. These irregularities are categorized as to whether or not they occur during flight time.
- (5) **Structural Inspection:** A detailed inspection of the airframe structure that may require special inspection techniques to determine the continuous integrity of the airframe and its related parts.

- (6) Manuals.** Instructions and standards for unscheduled maintenance should be in the operator's technical manuals. The manuals must contain procedures to be followed when using these manuals and recording scheduled and unscheduled maintenance.

5. GENERAL REQUIREMENTS

- 5.1.1 The maintenance of each aircraft shall be organized in accordance with an approved Aircraft Maintenance Programme (AMP). Every aircraft shall be maintained in accordance with a maintenance program approved by AAC, which shall be periodically reviewed and amended accordingly.
- 5.1.2 CV-CAR 9.D.150 requires that each AOC holder's aircraft maintenance programme and any subsequent amendment shall be submitted to the State of Registry for approval; Acceptance by the Authority will be conditioned upon prior approval by the State of Registry, or where appropriate, upon the AOC holder complying with recommendations provided by the State of Registry.
- 5.1.3 The Authority will also require an operator to include a reliability programme when the Authority determines that such a reliability programme is necessary. When such a determination is made by the Authority the AOC holder shall provide such procedures and information in the AOC holder's maintenance control manual.
- 5.1.4 It is the responsibility of the AAC to ensure that aircraft on its register are effectively maintained in an airworthy condition. The AAC approval of the Maintenance Programme provides a mechanism to record minimum standards of airworthiness that the owner/operator must comply with.
- 5.1.5 The term 'Maintenance Programme' is intended to include scheduled maintenance tasks and the associated procedures and standard maintenance practices. The term 'Maintenance Schedule' is intended to embrace the scheduled maintenance tasks alone.
- 5.1.6 An Aircraft Maintenance Programme (AMP) will be the source of all scheduled inspections, relevant controls and supporting data. The Maintenance Programme should always be active (subject to review and amendment) and utilised which enables effective maintenance to be carried out in a logical, concise, clear and controllable manner.
- 5.1.7 The AOC holder shall ensure that each aircraft is maintained in accordance with the AOC holder's aircraft approved maintenance programme as required by CV-CAR 9.D.150 which shall include:
- (1) Maintenance tasks and the intervals in which these are to be performed, taking into account the anticipated utilisation of the aircraft;
 - (2) When applicable a continuing structural integrity programme;
 - (3) Procedures for changing or deviating from paragraphs 4.1.8 and 4.1.9; and
 - (4) When applicable, condition monitoring and reliability programme for aircraft systems, components, and powerplants.
- 5.1.8 Repetitive maintenance tasks that are specified in mandatory intervals as a condition of approval of the type design shall be identified as such.

- 5.1.9 The maintenance programme should be based on maintenance programme information made available by the State of Design or by the organisation responsible for the type design, and any additional applicable experience.
- 5.1.10 Some of the subject material in this document may not be 'applicable' to a particular aircraft. This can only be confirmed by carrying out a detailed assessment as the aircraft may be affected by subsections of a larger section. Caution should be exercised before assuming that a subject or a subpart of this guidance is considered 'not applicable'.
- 5.1.11 The maintenance programme shall be based on the maintenance program information made available by the state of design or by the organization responsible for the type design, and any additional applicable experience.

6. MAINTENANCE PROGRAM APPROVAL PROCESS

- 6.1.1 Initial application for approval of a Maintenance Program should be made on formal application (AAC Form FS.AER.52) and be submitted to the Authority.
- 6.1.2 The applicant should review this guidance material, complete the application form at Annex A and submit it together with the following:
- (1) Draft copy of aircraft maintenance programme;
 - (2) Completed compliance document (AAC Form FS.AER.51) with CV-CAR 9.D.150 and NI: CV-CAR 9.D.150;
 - (3) Additional supporting documentation in support of the application;
 - (4) Payment of the appropriate application fee.
- 6.1.3 During the application process, the applicant should provide details to the AAC of a suitable person/s (Technical coordinator) or organisation that shall be responsible for the initial and subsequent development and control of the programme; this should include ensuring that the programme is suitably amended following regular and annual reviews.
- 6.1.4 The aircraft Maintenance Programme should contain a preface developed in line with the guidance template at Annex B. The objective of the preface is to record the process of controls and explanations of the Maintenance Programme contents.
- 6.1.5 Where the aircraft Maintenance Programme relies on other published documentation, references should be made to this documentation and, if requested, copies of this supporting documentation should be made available to the AAC.
- 6.1.6 The person/s or organisation nominated should have in place an appropriate subscription service to ensure any revisions made to the Maintenance Planning Document (MPD) or Chapter 5 inspection requirements are received for analysis to establish applicability and an effective inspection regime.
- 6.1.7 The manufacturer's Standard Maintenance Practices (SMP), also referred to as manufacturer's maintenance rules, describe the inspection philosophy of the manufacturer. These must be included and should become part of the introduction section of the Maintenance Programme. Where the manufacturer has not adequately defined an SMP, the applicant should provide for

acceptable standards derived from typical and relevant data. This material should be made available to the AAC.

- 6.1.8 The MP shall be produced in the English language in a format that is readily understandable to maintenance personnel.
- 6.1.9 The maintenance program shall be evaluated. When the Authority is satisfied, the program will be approved. Two copies of the maintenance program should be submitted to the Authority for approval.
- 6.1.10 One copy of the approved program will be retained by the Authority and the other returned to the operator.
- 6.1.11 On satisfactory completion of an investigation, the AAC will provide a formal approval letter that may include conditions and/or limitations. The approval reference should be incorporated in the front section of the Maintenance Programme including any correspondence associated with the Maintenance Programme.
- 6.1.12 If discrepancies are found, a notice listing specific discrepancies found is issued to the operator.

7. MAINTENANCE PROGRAMME BASIS

- 7.1.1 The Maintenance Programme is usually based upon the MRB report, the TC holder's maintenance planning document or Chapter 5 of the maintenance manual (the manufacturer's recommended maintenance programme).
- 7.1.2 The structure and format of these maintenance recommendations may be rewritten by the person/s or approved organisation nominated in paragraph 7 to better suit the operation and thereby establish control of the maintenance programme.
- 7.1.3 For a newly type-certificated aircraft for which no previously approved maintenance programme exists it will be necessary for the owner or nominated approved organisation to comprehensively appraise the manufacturer's recommendations (and the MRB report where applicable), together with other airworthiness information, in order to produce a realistic programme for approval.
- 7.1.4 In such circumstances it is important to continually monitor the effectiveness of the Maintenance Programme when limited operational/inspection data is available.
- 7.1.5 For existing aircraft types the operator can make comparisons with previously approved maintenance programmes; however it should not be assumed that a previously approved maintenance programme for one operator is automatically approved for another.
- 7.1.6 An evaluation should be made of the aircraft utilisation, flight hours, cycles/landings, equipment fit and, in particular, the experience of the owner or approved organisation when assessing an existing programme.
- 7.1.7 Where the authority considers the proposed Maintenance Programme as not acceptable in its current form, the authority should request appropriate changes such as additional maintenance tasks or de-escalation of check frequencies as necessary.

8. APPLICABILITY

- 8.1.1 It is acceptable to maintain more than one aircraft to the same Maintenance Programme. Typically one operator responsible for the Maintenance Programme would maintain several aircraft in an airworthy condition. The advantages of this would be: fleet optimisation, reliability data gathering and balancing scheduled maintenance tasks such as optimising engine life. In this case each individually registered aircraft would be listed on the programme under registration number.
- 8.1.2 If more than one aircraft of the same type is placed on a programme, a comparison check will be necessary. This will then be recorded in a supplemental section of the Maintenance Programme and utilised to identify the differences. Reference to the supplement must be clearly identified in the contents and introduction sections of the Maintenance Programme.
- 8.1.3 It is important if more than one aircraft is to be maintained to the same Maintenance Programme that the applicant liaises closely with the AAC in order to obtain an early agreement in principle prior to developing the actual Maintenance Programme.

9. MAINTENANCE PROGRAMME AMENDMENTS

- 9.1.1 Application for amendment of the maintenance program shall be made using the application form AAC form FS.AER.52.
- 9.1.2 Applicable supporting information such as the changes to the compliance document (AAC Form FS.AER.51) and other required documentation, shall be supplied to the AAC to assist in this process.
- 9.1.3 Amendments to the approved maintenance programme shall not be incorporated until approved by the AAC, when satisfied with the content and applicability of all amendments. Applicable supporting information should be supplied to the AAC to assist in this process.

10. REGULAR AND ANNUAL REVIEWS

- 10.1.1 The maintenance programme should be reviewed annually. All supporting documents that have been referenced in the Maintenance Programme should be considered during the annual review.
- 10.1.2 For aircraft subject to reliability analysis, the Maintenance Programme review should be conducted at intervals commensurate with the reliability programme.
- 10.1.3 In order to meet the requirements of the AAC, It is the responsibility of the nominated person/organisation identified in to ensure that instructions for continued airworthiness with regard to mandatory and non- mandatory requirements, incorporated design changes (modifications and repairs) and any requirements deemed necessary by the AAC are evaluated for applicability. Once evaluated, suitable amendments to the Maintenance Programme must be developed and approved.
- 10.1.4 Regular and annual reviews of the maintenance Programme shall as a minimum include the following items:
- (1) Applicable Mandatory Directives;
 - (2) Applicable evaluations of reliability analysis;
 - (3) Operational issues;

- (4) Maintenance findings;
- (5) Type Certificate holder's recommendations;
- (6) Revisions to the MRB report;
- (7) Revisions to Chapter 5 Maintenance Manual;
- (8) Applicable Supplemental Type Certificate Holders' revisions to instructions for continued airworthiness;
- (9) Aircraft utilisation (hours/cycles etc);
- (10) Changes to aircraft operational utilisation (Type of operation and climatic conditions);
- (11) Review of aircraft and equipment life limits;
- (12) Review of Corrosion Prevention Control Programme (CPCP) tasks and findings.

10.1.5 If the aircraft or its engines are not supported by a manufacturer's Reliability programme, because the aircraft is below a particular weight category, reviews of pilot reports (PIREPS), component removal, TBO, MEL usage, defect worksheets, MORs or ASRs for trends or patterns should be undertaken.

10.1.6 The person or organisation responsible for the Maintenance Programme should maintain records of all applicable continued airworthiness information. Following a review of this information, records should be maintained of technical justification supporting the amendment decisions for both inclusion and non-inclusion in the Maintenance Programme.

11. HUMAN PERFORMANCE

11.1.1 The design of the maintenance program shall have the following features:

- (1) Task or job sequences which are likely to reduce the probability or effect of error in its application (for example, performing engine maintenance with different work teams or between different flights);
- (2) Work packages which suit an operator's specific operation (for example, overnight packages); and
- (3) Task or job cards or sheets which meet a standard for good document design.

11.1.2 Consideration should be given to human performance, document format and user defined functions within the maintenance programme such as:

- (1) Maintenance Planning: Data required to effectively produce maintenance inputs including the arrangement of inspections in a manner that avoids conflict of inspection/maintenance activities, typically known as task orientation.
- (2) Mandatory Inspection Tasks: Ensuring maintenance planning personnel have clear visibility of such tasks preventing any unauthorised escalation.
- (3) Required Reporting: Tasks associated with reporting such as SSID are readily identified.

- (4) Critical Task Controls: Ensuring tasks that are critical in nature are planned and allocated in a segregated manner that prevents the possibility of multiple error maintenance.
- (5) Maintenance Resource Planning: Tasks requiring specialised tooling and or techniques are readily identified with reference to required resources.

12. PRE-FLIGHT, DAILY, WEEKLY OR OTHER INSPECTIONS

- 12.1.1 The Maintenance Programme should identify inspection tasks requiring a Certificate of Release to Service.
- 12.1.2 In some cases, air operators may decide to add Daily, Weekly or any other inspections to the aircraft maintenance program, despite the fact that these inspections are not required of MRB (MPD) or Chapter 5 AMM requirements.
- 12.1.3 Pre-flight inspections can vary between aircraft manufacturers, therefore it is important when determining the content of a pre-flight inspection to consider whether the inspection tasks require a Certificate of Release to Service.
- 12.1.4 Pre-Flight, Daily, weekly or any other inspection, which contain additional tasks not required by the State of design, should remain part of the Maintenance Programme in order to control their effectiveness.
- 12.1.5 A maintenance task requiring a release to service is normally identified by the aircraft manufacturer. Where this is not clear or is ambiguous, contact should be made with the AAC to establish when a particular maintenance task requires a Certificate of Release to service.

13. MIGRATING AIRCRAFT BETWEEN MAINTENANCE PROGRAMMES

- 13.1.1 When transferring an aircraft between maintenance programmes, the transfer should be carried out in a controlled manner which is also approved by the AAC.
- 13.1.2 A 'bridging check' should be determined and form the basis of the technical justification required by the AAC for their approval of the aircraft transfer.
- 13.1.3 A 'bridging check' is not in itself a maintenance package; it is the result of a detailed analysis of the transfer aircraft maintenance history in relation to the Maintenance Programme the aircraft is to be placed under. Typically there may be some maintenance activity at the time of transfer; the amount will clearly be influenced by the current maintenance status of the subject aircraft and to the extent the Maintenance Programme has been developed.
- 13.1.4 The transfer proposal to the AAC should detail the immediate maintenance activities, the duration of the transition encompassing the scheduled maintenance activities, any variations including escalations to inspection periods.
- 13.1.5 Consideration should be given to reliability programmes and any significant changes in operation.
- 13.1.6 Records of any CPCP or SSID programme should form part of the transfer analysis.
- 13.1.7 In order to allow an aircraft to change operators in a timely manner it may be necessary to have an aircraft recorded against two maintenance programmes for a limited time. This is allowable,

provided the circumstances and controls associated with the duplication and a suitable end date is clearly annotated and agreed by all parties including the AAC.

13.1.8 Aircraft records should make reference to the approved transfer arrangements quoting the AAC approval reference.

14. MAINTENANCE PROGRAMME CONTENT

14.1.1 Usually, a maintenance program consist of two parts:

(1) **Part I** - Front, Preface or Introduction section, which contains the basic information required to be in the maintenance program preface.

Note 1: The introduction section may be otherwise located in the beginning of all subsections.

(2) **Part II** - Schedule or Program report section and the required documents used to perform the maintenance, which is consists of the following subsections:

- (a) System and powerplant inspections;
- (b) Structures inspections;
- (c) Zonal inspections;
- (d) High Intensity Radiated Fields (HIRF)/Lightning;
- (e) Corrosion Prevention and Control (CPCP); and
- (f) Airworthiness Limitations.

14.1.2 For some type of aircraft, one of the subsections may include other subsections, and some subsections may not exist at all.

14.1.3 The airworthiness limitations subsections may consist the following:

- (1) Certification Maintenance Requirements (CMR);
- (2) Airworthiness Limitation Inspections (ALI) - Structures;
- (3) Fuel System Limitation Items (FSL); and
- (4) Life-Limited Items. Nevertheless, some airworthiness limitations subsections may be different

14.1.4 General directives:

- (1) Any repetitive instructions of continued airworthiness derived from modifications and repairs should also be incorporated into the approved Maintenance Programme.
- (2) For aircraft types where Certification Maintenance Review (CMR) tasks are identified as part of the Type Certification process, these tasks should be subject to separate procedures for escalation.

- (3) Visibility of mandatory tasks such as Certificate of Maintenance Requirements (CMR) and Failure Effect Categories (FEC) found within the MSG-3 logic flow path should be identified in the Maintenance Programme in order that these requirements are not the subject of unauthorised variations to the frequency of inspection (i.e. escalation).
- (4) Task frequencies should be clearly identified within the introductory parts of the Maintenance Programme from 'A' Check or 1st Flight of the day to major inspection periods/intervals.
- (5) The Maintenance Programme, where possible, should identify aircraft panel charts and aircraft Zones (Zoning).
- (6) Where a Supplemental Type Certificate (e.g. cabin interior) has established the configuration of the aircraft, the appropriate configuration inspection manual should be appropriately referred to for aircraft inspections effected by the configuration changes. These would typically be for gaining access and planning for task orientation.
- (7) Instructions from equipment manufacturers shall be integrated as scheduled requirements of the maintenance program.
- (8) EWIS (Electrical Wiring Interconnection System) are the scheduled maintenance requirements in the system & powerplant and zonal sections, meant to identify certain design configuration features intended to preclude a fuel tank ignition source for the operational life of the airplane. The requirements establish the basis for the enhanced zonal analysis procedure which may be found in FAA AC 25-27.
- (9) Critical Design Configuration Control Limitation (CDCCLs) are means of identifying certain design configuration features intended to preclude a fuel tank ignition source for the operational life of the airplane. The part detailing fuel system limitation items contain CDCCLs that need special attention when any maintenance activity is performed in their areas.

15. INSPECTION STANDARDS

- 15.1.1 All significant terms and abbreviations used within the Programme/Schedule to define each maintenance task are those defined in accordance with the Type Certificate holder's definitions, current CV-CARs or, in the absence of formal definitions, those quoted in the airline industry standard World Airlines Technical Operations Glossary.
- 15.1.2 The inspection standards applied to individual task inspections must meet the requirements of the Type Certificate holder's recommended standards and practices.
- 15.1.3 The Maintenance Programme should include a paragraph describing in detail, mandatory items such as RII or duplicate inspections (either at the main AMO of the air operator or at another AMOs that may be unfamiliar with the format of RII/duplicate inspection philosophy of the air operator). In addition, consideration should also be given to assessment of 'vital points and critical task inspections'.

16. TASK CARDS

- 16.1.1 An important feature of Task cards is recognising their role in achieving the required maintenance standard.

- 16.1.2 Task Cards should be manageable, offer clear sections for correct certification (i.e. sign and stamp) and give clear instructions to maintenance personnel regarding tasks. This includes ensuring that references to other documents have been previously assessed and, if not applicable, the task is amended.
- 16.1.3 Where task cards contain actual maintenance instruction data, arrangements must be made to ensure appropriate document controls.
- 16.1.4 Critical task controls particularly regarding error maintenance can be effectively mitigated.
- 16.1.5 Task cards can be formatted in such a manner that provides production maintenance planners appropriate indicators and data to make provisions for segregation, appropriate resources and task orientation.

17. ENVIRONMENTAL

- 17.1.1 Fuel systems are susceptible to microbiological growth in hot humid conditions and increased water content when the aircraft sits on the ground in hot humid climates. Fuel system water sampling tasks and fuel tank structural inspection may need to take into account the likelihood of microbiological contamination and corrosion.
- 17.1.2 Consideration should be given to routinely monitoring aircraft utilisation and adverse weather conditions (i.e. salt laden atmosphere, high humidity, extreme heat etc). Consideration should include increasing maintenance inputs for cleaning, lubrication and inspection of protective finishes as an example.
- 17.1.3 There should be mitigations for the effects of operating aircraft on runways that have been categorised as rough surfaces. Manufacturer's recommendations such as service letters and maintenance requirements should be appropriately incorporated into the Maintenance Programme. Typical mitigations are increased lubrication frequencies of undercarriage components and fittings due to the possibility of increase in lubrication migration from bearing surfaces. Where published data is not available, guidance should be sought from the aircraft manufacturer.

18. CORROSION OF AIRCRAFT STRUCTURE

- 18.1.1 Corrosion Control programmes (CPCP) require specific controls, procedures and reporting protocols. The Maintenance Programme should provide details of specific requirements including clear instructions regarding the inspection tasks in order that production maintenance planning is able to resource the tasks appropriately.
- 18.1.2 Where the manufacturer makes no specific reference to corrosion control programmes, this should be taken into account when inspecting structure for condition. The assessment may require adjustment of maintenance programme periods. The application of corrosion inhibitors during maintenance may significantly improve the duration of the airframe.

19. MANDATORY REQUIREMENTS

- 19.1.1 The inclusion of repetitive Airworthiness Directives (AD) or Service Bulletins (SB) in the Maintenance Programme should be considered to reduce the use of the 'Out of Phase' task management functions.
- 19.1.2 Fatigue lives and mandatory life limits published by the manufacturer or by the AAC should be included in the Maintenance Programme.
- 19.1.3 Fuel Tank System Safety is now a feature for many aircraft types. Mandatory requirements are now published with compliance times. The rectification actions are complex, involving many disciplines. The Maintenance Programme should be amended accordingly ensuring that the appropriate continued airworthiness instructions are referred to.

20. DESIGN CHANGES

- 20.1.1 Approved modifications or repairs incorporated on an aircraft may also have "Instructions for Continued Airworthiness". These should be assessed and included in the Maintenance Programme.
- 20.1.2 Significant structural changes may have an effect on structural programmes that may not have been finalised at the time of incorporation. This may be due to a fatigue damage assessment that only affects the fatigue lives from a total cycle/hour amount not yet achieved. In such circumstances it is important to ensure there is a marker in the maintenance programme. This is to ensure that nearer the operation life when the fatigue effects take hold, material required to amend the structural programme is obtained from the Supplemental Type Certificate holder.

21. SPECIAL OPERATIONS

- 21.1.1 Special operational approvals granted by the AAC such as ETOPS, RVSM, PBN, AWOPS and MNPS etc may involve changes to maintenance inspection requirements, frequencies, or tasks introduced by modification to the aircraft.
- 21.1.2 Any additional maintenance tasks associated with maintaining these approvals should be reviewed and their details included in the Maintenance Programme or in order to satisfy the approval process of special operations, the inspection tasks supporting the aircraft capability should be referenced.

22. ADDITIONAL MAINTENANCE TASKS

- 22.1.1 The maintenance review board (MRB) report, the maintenance planning document (MPD), and the relevant chapters of the maintenance manual source documents used as the basis for the Maintenance Programme, do not normally include the required maintenance for such things as seats, safety equipment, galley equipment etc., as these can be specified and sourced from different equipment manufacturers. The aircraft manufacturers recommended maintenance document (e.g. MPD) will frequently say "in accordance with the manufacturer's requirements" for these items. The information for continuing airworthiness for these items is found in the documents supplied from the Original Equipment Manufacturer (OEM). These must be reviewed and the necessary maintenance tasks included within the Maintenance Programme.

22.1.2 Modifications to the aircraft, engines, propellers and equipment embodied after manufacture of the aircraft are not normally included in the source documents used as the basis for the Maintenance Programme. The information for continuing airworthiness supplied with these modifications should be reviewed and their requirements included in the Maintenance Programme.

22.1.3 The Operator may elect to perform non-mandatory maintenance tasks normally derived from Service Bulletins, Service Letters etc. These additional maintenance tasks should be reviewed and their details included in the Maintenance Programme.

23. EQUIPMENT CARRIAGE

23.1.1 CV-CAR 7, 8 and 9 detail mandatory equipment requirements for certain types of aircraft operation. With regard to the equipment fitted and in order to conform to CV-CAR requirements, instructions for continued airworthiness should be incorporated into the Maintenance Programme.

23.1.2 Any other equipment carried should also have continued airworthiness instructions incorporated into the Maintenance Programme.

23.1.3 The 'installation modifications' of additional equipment should identify any required continued airworthiness inspections. These may be in the form of suitable vendor manuals. In the absence of such instructions suitable inspection techniques should be identified per paragraph 18.1.2.

24. SAFETY EQUIPMENT

24.1.1 Where the aircraft is required to carry safety equipment this should be checked for serviceability at regular intervals. The equipment manufacturer should specify overhaul and life limit periods.

24.1.2 The maintenance programme can make provision for fleet sampling of emergency equipment such as slide rafts. When sufficient operating aircraft allow for a fleet sampling programme, AAC agreement should be established for its introduction in line with information promulgated by the safety equipment manufacturer.

25. CVR/FDR

25.1.1 For each installed CVR/FDR, arrangements for data acquisition and verification of recorded data should be established with a recognised playback facility.

25.1.2 The type acceptance standards should be applied with regard to periods of testing and recorded data verification for each installed CVR/FDR.

25.1.3 Records should be maintained for a minimum period of 24 months for all testing undertaken.

25.1.4 Instructions from equipment manufacturers and continued airworthiness organisations shall be integrated as scheduled requirements of the Maintenance Programme.

26. BATTERY CAPACITY CHECKS

26.1.1 Routine capacity checks should be carried out at periods specified in accordance with manufacturer's instructions, otherwise the following periods shall apply:

- (1) Lead acid Battery – 3 months
- (2) Ni-Cad Battery – 4 months.

27. WEIGHT AND BALANCE

27.1.1 An aircraft weighing schedule should be included into the Maintenance Programme.

Note: Any permanent, non-operational role changes to the aircraft either by modification or repair that either adds or reduces weight needs to be assessed, calculated and, if necessary, the aircraft weight records including the Weight and Balance C of G Schedule amended.

27.1.2 The aircraft should be weighed in accordance with the frequency and manner defined in CV-CAR 5 and should be included within the approved maintenance programme.

28. PERMITTED VARIATIONS (SHORT TERM ESCALATION) TO MAINTENANCE PERIODS

28.1.1 The instructions for continuing airworthiness from the Type Certificate holders should establish the criteria for the short term escalation. Only if the Type Certificate holder does not specify any limitations on one-time short term escalation, the limitations in this section, as specified in Table 1. apply.

Note: The Maintenance Program must specify which of the above is being used.

28.1.2 Periods prescribed by the Maintenance Programme may only be varied with the approval of the AAC or through a procedure developed in the MCM or MP and approved by the AAC.

28.1.3 Variations shall be permitted only when the periods prescribed by the Maintenance Programme cannot be complied with due to circumstances that could not have been foreseen by the operator.

28.1.4 A variation shall not be applied if there is evidence or reason to believe that it could endanger flight safety.

28.1.5 The variations permitted in table 1. do not apply to:

- (1) Those components for which an ultimate (scrap) life has been prescribed by Type Certificate Data sheet, Flight Manuals, or Manufacturer's publications (e.g. primary structure, components with limited fatigue life, and high energy rotating parts for which containment is not prescribed).
- (2) Airworthiness Limitation Items (ALIs) specified in type certificate data sheet. These may include CMRs, safe life airworthiness limitation items, and damage-tolerant ALIs;
- (3) Tasks derived from a MRB/MPD based on MSG-3 analysis and with a Failure Effect Category (FEC) of 5 ('Evidence Safety Effect') and 8 ('Hidden Safety Effect');
- (4) Intervals specified by an Airworthiness Directive

- (5) ETOPS (EDTO) related tasks;
- (6) Limitations specified by Minimum Equipment lists (MEL) or Configuration Deviation Lists (CDL).
- (7) Structural sampling periods imposed by the MRB.
- (8) Special Structural Inspection Program or damage tolerance requirements.
- (9) A task which is identified in the fuel system airworthiness limitations or Critical Design Configuration Control List (CDCCL)
- (10) Powerplant and Airframe components under TBO

28.1.6 It is the responsibility of the Technical Coordinator (TC) to ensure that arrangements are effectively established to maintain the aircraft in accordance with the approved Maintenance Programme.

28.1.7 A review of the proposed escalation should include:

- (1) Previous inspections results;
- (2) Supplemental/additional inspections (sampling inspections as specified in guidance materials - AC, Policy Letter (PL) etc.) that may be needed to ensure continued airworthiness during the escalation.

28.1.8 A permitted variation may only be used if approved by AAC, the air operator shall inform the AAC of each variation within 48 hours, unless the AAC otherwise agrees to receive such information through monthly reports etc.

28.1.9 Unless specifically prohibited by an Airworthiness Directive or a manufacturer’s requirement, and subject to approval by the AAC for inclusion in the Maintenance Programme, inspection periods may be varied in accordance with the ‘Inspection Planning Tolerance – Extensions’ (shown in Table 1 below).

| PERIOD | MAXIMUM VARIATION |
|---|--|
| Items controlled by flying hours | |
| 5,000 flying hours or less | 10% |
| More than 5,000 flying hours | 500 flying hours |
| Items controlled by calendar time | |
| One year or less | The lesser of 10% or one month |
| More than 1 year but less than 3 years | 2 months |
| More than 3 years | 3 Months |
| Items controlled by cycles or landings | |
| 500 cycles/landings or less | The lesser of 10% or 25 cycles/landings |
| More than 500 cycles/landings | The lesser of 10% or 500 cycles/landings |

| | |
|---|---|
| Items controlled by more than one limit. | For items that are controlled by more than one limit i.e. flying hours and calendar time, |
|---|---|

Table 1- Inspection Planning Tolerance – Extensions

- 28.1.10 The extension periods in Table 1 above should be supported by appropriate technical justification. This should be established from a detailed review of the aircraft records, maintenance and operational history. It should also establish inspection requirements that cannot be subject to variation as per Table 1.
- 28.1.11 The period to the next required inspection shall be deemed to begin at the point prior to when the task/interval was extended. No extension may be taken towards the next required inspection.
- 28.1.12 Each use of a variation of Maintenance periods should at least include the following information:
- (1) Aircraft identification, by registration marks;
 - (2) Identification of the tasks to which the permitted variation is requested;
 - (3) Justification of the need for such a variation;
 - (4) Proposed extension (flight hours, cycles, etc.);
 - (5) Details of the previous inspection (by flight hours, cycles, inspection results analysis etc.);
 - (6) A declaration that the variation does not affect any items or tasks listed in Para. E above;
 - (7) Compensation tasks (i.e. additional maintenance tasks undertaken to be performed before the new proposed limit), if applicable.
- 28.1.13 An air operator delegated with the permission to perform a variation shall review at least once a year the implementation of the permission and the number of variations performed, and shall advise the AAC of the results. If the number of variations appears to be too high or not to be in compliance with this procedure, the AAC may decide to withdraw the delegation or to vary the conditions of the delegation.

29. LOW UTILISATION MAINTENANCE PROGRAMMES

- 29.1.1 A maintenance-planning document is produced by the manufacturer, which is based on an aircraft's "average" annual utilisation based on commercial/marketing criteria. This is applied during type certification.
- 29.1.2 It is acknowledged that the annual utilisation of certain operators is outside the range, which is termed "average" for that aircraft's operation.
- 29.1.3 Providing the annual utilisation declared by the operator and included in the front of the maintenance programme is within the definition of the "average" (in other words what the aircraft was designed for) there is no need for a Low Utilisation Maintenance Programme (LUMP).
- 29.1.4 Where it is determined that the actual aircraft utilisation will be below the Type Certified utilisation, this should be considered as a design change. In such circumstances the Type Certificate holder

may have developed a Low Utilisation Maintenance Programme that may be suitable for the specific operation and environment.

29.1.5 An operator proposing to use a Low Utilisation Maintenance Programme should have consulted the Type Certificate holder for technical support in developing their Maintenance Programme.

29.1.6 It is possible that 'Hard times' and component overhauls may be additional features.

29.1.7 A reliability programme will be less effective due to lack of statistical data and the MEL may need a review due to changes in the reliability of components.

29.1.8 Generally, the aircraft is assessed for exposure to risk of failures that are heavily dependent on:

- (1) Flight Cycle / Flight Hours ratio;
- (2) Average sector length;
- (3) Operating environment;
- (4) Flight Hours vs. Airframe design life;
- (5) Structures and systems loading;
- (6) Reliability predictions.

29.1.9 For an aircraft on a LUMP normal assessments of the above may prove inadequate. It is important that special consideration is given to these in view of compromises and associated factors of low utilisation.

29.1.10 Recommended lubrication tasks are based on average utilisation predictions therefore lubrication tasks triggered by Flight Cycles or Flight Hours will be less frequent on aircraft with low utilisation, allowing corrosion growth which could be accelerated in a harsh environment.

29.1.11 The operator must consult the Type Certificate holder who may only provide feedback on world fleet reports; therefore the operator will need to add its own experience from its reliability programme to include its own specific experience.

29.1.12 Low utilisation may lead to accumulation of moisture, reduced distribution of oil/grease and possible chemical breakdown of oil/grease. This could lead to increased internal corrosion of structures, power plants and components.

29.1.13 A LUMP should address the accumulation of moisture in cargo holds, door sills and require drains to be regularly checked. This is even more important in winter conditions. The lack of protective oil/grease on exposed surfaces i.e. landing gear oleos will increase corrosion growth.

29.1.14 Seal leakage is a common fault when aircraft sit around in cold conditions for long periods. Some hydraulic fluids, especially reclaimed fluids, would break down and separate, causing internal leaking of actuators when overheated or left for long periods.

29.1.15 Low distribution rates of oil/grease may lead to an increase in the predicted mechanical wear-out rate and corrosion of control cables and mechanical systems. Corrosion is accelerated in moist ground conditions and slower when aircraft are operating in dry cold atmospheres.

- 29.1.16 Fuselage insulation blankets will be prone to moisture accumulation requiring additional inspections as they are likely to accumulate large quantities of water on the ground due to humidity or inclement weather. If the insulation blankets are not sealed they will soak this water up causing corrosion and increase the aircraft's weight.
- 29.1.17 Structural areas may not be opened up and inspected for long periods of time as they normally would for servicing and therefore corrosion will progress undetected.
- 29.1.18 When structural areas are opened up inspection standards may need to be modified from General Visual to Detailed in order to identify known vulnerable areas.
- 29.1.19 Low Utilisation may affect electronic component reliability due to relatively long periods of power down. In a low voltage electronic system a small amount of resistance due to corrosion build up, possibly due to inactivity, could damage a sensitive system.
- 29.1.20 BITE functionality may be affected, invalidating the statistical assumptions. Some BITE functions only take place on boot up of an electronic system and if this is not happening regularly there may be dormant failures which also means the systems are not checked and exercised on a regular basis.
- 29.1.21 Battery reliability may be significantly affected by loading profile changes; this includes implanted cells within equipment.
- 29.1.22 Exposure to corrosion will affect terminals, bond joints and plug breaks, so terminals and joints such as Engine Fire detection systems, which are particularly susceptible to break down from corrosion, and deposits should be considered.
- 29.1.23 Avionics systems work and function better when used regularly. If left for long periods of time they are susceptible to spurious interference.
- 29.1.24 Manometric elements in aircraft instrument systems may require additional maintenance due to moisture ingress and fungi contamination. Most instruments are ventilated on a regular basis during normal operation and predominately remain free from contamination; this may not be the case for a low utilised aircraft.

30. RELIABILITY

30.1.1 A reliability programme should feature in a Maintenance Programme under the following circumstances:

- (1) The aircraft maintenance programme is based upon MSG-3 logic;
- (2) The aircraft maintenance programme includes condition monitored components;
- (3) The aircraft maintenance programme does not contain overhaul time periods for all significant system components;
- (4) When specified by the manufacturer's maintenance planning document or MRB.

30.1.2 A reliability Programme need not be developed in the following cases:

- (1) The maintenance programme is based upon the MSG-1 or -2 logic but only contains hard time or on condition items;

- (2) The aircraft is not above 5700Kgs MTOM or multi engine helicopter;
- (3) The aircraft maintenance programme provides overhaul time periods for all significant system components.

Note: for the purpose of this paragraph, a significant system is a system the failure of which could hazard aircraft safety.

30.1.3 For approval the AAC will require access to all data used to prepare the reliability programme as submitted.

30.1.4 The objective of the reliability programme should be included in the Maintenance Programme detailing the prime elements of the programme. As a minimum it should include a statement to:

- (1) Substantiate that the existing schedule of inspections is appropriate in maintaining the aircraft in an airworthy condition;
- (2) Identify corrective action to any issues of reliability;
- (3) Establish that system reliability conforms to applicable performance data promulgated by the aircraft manufacturer;
- (4) Determine the optimum level of scheduled inspections;
- (5) Determine the effectiveness of any amendment to the schedule of inspections.

30.1.5 The extent of the objectives should be directly related to the scope of the programme. Its scope could vary from a component defect monitoring system for a small operator, to an integrated maintenance management programme for a large commercial operator. The manufacturer's maintenance planning documents may give guidance on the objectives and should be consulted in every case.

30.1.6 The type of information collected for analysis should be related to the objectives of the programme and should be such that it enables both an overall broad based assessment of the information to be made and also allow for assessments to be made as to whether any reaction, both to trends and to individual events, is necessary. The following are examples of the normal prime sources:

- (1) Pilots' Reports;
- (2) Technical Log;
- (3) Aircraft Maintenance Access Terminal / On-board Maintenance System readouts;
- (4) Maintenance Worksheets;
- (5) Workshop Reports;
- (6) Reports on Functional Checks;
- (7) Reports on Special Inspections;

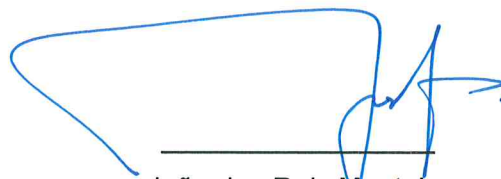
- (8) Stores Issues/Reports;
- (9) Air Safety Reports;
- (10) Reports on Technical Delays and Incidents;
- (11) Other sources: ETOPS, RVSM, CAT MIL.

30.1.7 Information and data collection sources of information should be listed and procedures for the transmission of information from the sources, together with the procedure for collecting and receiving it should be referred to. These procedures should reside with the organisation responsible for the continued airworthiness management of the aircraft and be reflected in their Maintenance Control Manual.

30.1.8 Reliability programmes are dependent on sufficient data sampling. Fleet size is clearly a factor in data gathering. For small fleet sizes of fewer than 6 aircraft of the same type, the following should be considered:

- (1) Complex reliability programmes could be inappropriate for a small fleet. It is recommended that such operators tailor their reliability programmes to suit the size and complexity of operation.
- (2) One difficulty with a small fleet of aircraft consists in the amount of available data that can be processed: when this amount is too low, the calculation of alert level is very coarse. Therefore "alert levels" should be used carefully.
- (3) An operator of a small fleet of aircraft, when establishing a reliability programme, should consider the following:
 - (a) The programme should focus on areas where a sufficient amount of data is likely to be processed;
 - (b) When the amount of available data is very limited, engineering judgement is a vital element. In the following examples, careful engineering analysis should be exercised before taking decisions;
 - (c) A "0" rate in the statistical calculation may possibly simply reveal that statistical data is missing, rather than no potential problem.

30.1.9 When alert levels are used, a single event may reach the alert level. Engineering judgement is necessary so as to discriminate an isolated incident from an actual need for a corrective action. It is advisable in such circumstances to review other data sources such as other similar operational data to verify decisions made.



João dos Reis Monteiro
President of the Board

ANNEX A - APPLICATION FOR THE APPROVAL OF AN AIRCRAFT MAINTENANCE PROGRAMME

| | | | |
|--|--|------------|------------|
|  AAC AGÊNCIA DE AVIAÇÃO CIVIL | APPLICATION FOR THE APPROVAL OF AN AIRCRAFT MAINTENANCE PROGRAMME | Reference: | FS.AER.52 |
| | | Revision: | Revision 1 |
| | | Date: | 21-07-2015 |

MP Initial approval

MP Change Approval

| | | | |
|--|---------------------|--|-------------|
| 1. PARTICULARS REGARDING THE OPERATOR/APPLICANT | | | |
| Full name (Co. Representative): | | | |
| Operator/Applicant: | | AOC reference number – if applicable: | |
| Full business/residential address: | | | |
| Name of person who can be contacted for further information concerning this application: | | | |
| Position: | | | |
| Postal address: | | Telephone number: | Fax number: |
| Owner name (if different from the operator) | | | |
| Owner address: | | | |
| Owner Postal address: | | Telephone number: | Fax number: |
| 2. MAINTENANCE PROGRAMME (MP) | | | |
| Operator's MP Reference | | Issue nº: | |
| Aircraft Type/Model: | | Issue date: | |
| Engine(s) Type: | | Amendment nº: | |
| APU Type: | | Amendment date: | |
| Propeller Type: | | Summary of Changes: | |
| Registration(s): | | | |
| Special Operations: <input type="checkbox"/> ETOPS <input type="checkbox"/> RVSM <input type="checkbox"/> CAT II <input type="checkbox"/> CAT III <input type="checkbox"/> Other, specify:..... | | | |
| Prepared by: | | Checked By: | Date: |
| 3. LIST ALL SOURCE DOCUMENT(S) SUBMITTED WITH THIS APPLICATION: | | | |
| <input type="checkbox"/> Type Certificate Data Sheets (TCDS) for airframe, engine(s), propeller(s) and APU, <input type="checkbox"/> Maintenance Review Board Report (MRBR or MRB), <input type="checkbox"/> Certification Maintenance Requirements (CMR), <input type="checkbox"/> Maintenance Planning Document (MPD), <input type="checkbox"/> Aircraft Maintenance Manual chapter 5 (AMM) <input type="checkbox"/> Engine Maintenance Manual (EMM) <input type="checkbox"/> Airworthiness Limitations items (ALI) <input type="checkbox"/> Life Limitations (LL) <input type="checkbox"/> Corrosion Preventive Control Programme (CPCP) <input type="checkbox"/> Supplemental Structural Inspection Programmes (SSID) | | <input type="checkbox"/> Vendor / Original Equipment data (CMM) <input type="checkbox"/> Supplementary Type Certificate(s) (STC), <input type="checkbox"/> Airworthiness Directive(s), <input type="checkbox"/> Service Bulletin(s) (SB), <input type="checkbox"/> Service Letters (SL), <input type="checkbox"/> Service Instruction (SI), <input type="checkbox"/> Operator own tasks, <input type="checkbox"/> Modifications other than STC and SB, <input type="checkbox"/> Repairs, dents and scratches, <input type="checkbox"/> Reliability programme, <input type="checkbox"/> Flight Manual (FM). | |
| COMPLIANCE STATEMENT: This Maintenance Programme complies with the manufacturer's minimum maintenance and inspection requirements and the requirements of the Cabo Verde Civil Aviation Authority for the airframe, engines (on wing), systems and components except wherein previously or hereby Approved by the Cabo Verde Civil Aviation Authority. | | | |
| Signed: | | Position: | Date: |
| AAC use Only | | | |
| Date received: | | Inspector Name: | |
| Date of completion: | Approval reference: | SRS Nº: | Signature: |
| FS.AER.52 | July 2015 | | |

ANNEX B - MAINTENANCE PROGRAMME COMPLIANCE DOCUMENT

| | | | |
|---|--|------------|------------|
|  | MAINTENANCE PROGRAMME COMPLIANCE DOCUMENT | Reference: | FS.AER.051 |
| | | Revision: | Revision 1 |
| | | Date: | 21-07-2015 |

This document must be completed and enclosed with application

| Maintenance programme | Maintenance programme reference |
|---|---------------------------------|
| AOC Number (if applicable): | |
| Operator's MP/ reference: | |
| Owner / Operators Name: | |
| Amendment Status: | |
| Aircraft type of operations (eg. private, commercial air transport, etc.) | |
| Details of the previous maintenance programme: | |
| Revision notice | |

| | Details | Compliance Y/N/NA | Manual (MCM/MP) References/Notes | AAC Remark |
|----------|---|----------------------|-------------------------------------|---------------|
| 1 | GENERAL REQUIREMENTS | | | |
| 1.1 | The maintenance programme should contain the following basic information. | | | |
| 1.1.1 | The type/model/ and registration number of the aircraft | | | |
| | The type/model of the engines | | | |
| | The type/model of the propellers, where applicable | | | |
| | The type/model of the auxiliary power units, where applicable | | | |
| 1.1.2 | The name and address of the owner, operator or approved organisation managing the aircraft airworthiness. | | | |
| 1.1.3 | The reference, the date of issue and issue number of the approved maintenance programme. | | | |
| 1.1.4 | A statement signed by the owner/operator or approved organisation managing the aircraft airworthiness to the effect that the specified aircraft will be maintained to the programme and that the programme will be reviewed and updated as required. See ANNEX C to this document | | | |
| 1.1.5 | Table of Contents | | | |
| | List of Effective Pages | | | |
| | Revision status of the document. | | | |
| 1.1.6 | 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. | | Annual utilization:..... | |

| | Details | Compliance Y/N/NA | Manual (MCM/MP) References/Notes | AAC Remark |
|---------|---|-------------------|----------------------------------|------------|
| 1.1.7 | Procedures for the escalation of established check periods, where applicable and acceptable to the competent authority of registry. | | | |
| 1.1.8 | Provision to record the date and reference of approved amendments incorporated in the maintenance programme. | | | |
| 1.1.9 | Details of pre-flight maintenance tasks that are accomplished by maintenance staff. | | | |
| 1.1.10 | The tasks and the periods (intervals / frequencies) at which inspections should be carried out, together with the associated systems and installations should be inspected. This should include the type and degree of inspection required. | | | |
| | a. Aircraft | | | |
| | b. Engine(s) | | | |
| | c. APU | | | |
| | d. Propeller(s) | | | |
| | e. Components | | | |
| | f. Accessories | | | |
| | g. Equipment | | | |
| | h. Instruments | | | |
| | i. Electrical and radio apparatus | | | |
| 1.1.11 | The periods at which components should be checked, cleaned, lubricated, replenished, adjusted and tested. | | | |
| | a. Checked | | | |
| | b. Cleaned | | | |
| | c. Lubricated | | | |
| | d. Replenished | | | |
| | e. Adjusted | | | |
| | f. Tested | | | |
| 1.1.12 | If applicable details of ageing aircraft system requirements together with any specified sampling programmes. | | | |
| 1.1.13 | If applicable details of specific structural maintenance programmes where issued by the type certificate holder including but not limited to: | | | |
| | a. Maintenance of structural Integrity by damage Tolerance and Supplemental Structural Inspection Programmes (SSID). | | | |
| | b. Structural maintenance programmes resulting from the SB review performed by the TC holder | | | |
| | c. Corrosion prevention and control. | | | |
| | d. Repair Assessment. | | | |
| | e. Widespread Fatigue Damage | | | |
| 1.1.14. | If applicable, details of Critical Design Configuration Control Limitations together with appropriate procedures. | | | |
| 1.1.15 | If applicable a statement of the limit of validity in terms of total flight cycles/calendar date/flight hours for the structural programme in 1.1.13. | | | |
| 1.1.16 | The periods at which overhauls should be made | | | |
| | The periods at which replacements should be made | | | |

| | Details | Compliance Y/N/NA | Manual (MCM/MP) References/Notes | AAC Remark |
|----------|--|-------------------|----------------------------------|------------|
| 1.1.17 | A cross-reference to other documents approved by the Agency which contain the details of maintenance tasks related to mandatory life limitations, Certification Maintenance Requirements (CMR's) and AD's. <i>Note: To prevent inadvertent variations to such tasks or intervals these items should not be included in the main portion of the maintenance programme document, or any planning control system, without specific identification of their mandatory status.</i> | | | |
| | a. Mandatory life limitations | | | |
| | b. Certification Maintenance Requirements (CMR's), (if applicable) | | | |
| | c. Airworthiness Directives (AD) | | | |
| | Specific identification of the above items mandatory status | | | |
| 1.1.18 | Details of, or cross-reference to, any required reliability programme or statistical methods of continuous Surveillance. | | | |
| 1.1.19 | A statement that practices and procedures to satisfy the programme should be 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. | | | |
| 1.1.20 | Each maintenance task quoted should be defined in a definition section of the programme. | | | |
| 2 | PROGRAMME BASIS | | | |
| 2.1 | Is the programme based upon the MRB report, the TC holder's maintenance planning document or Chapter 5 of the maintenance manual? | | | |
| 2.2 | For newly type-certificated aircraft / comprehensively appraise the manufacturer's recommendations (and MRB report where applicable) | | | |
| 2.3 | For existing aircraft types, comparisons with maintenance programmes previously approved | | | |
| 2.4 | Critical Design Configuration Control Limitations (CDCCL) If CDCCL have been identified for the aircraft type by the TC/STC holder, maintenance instructions should be developed. CDCCL's are characterized by features in an aircraft installation or component that should be retained during modification, change, repair, or scheduled maintenance for the operational life of the aircraft or applicable component or part. (ED Decision 2007/001/R-13/03/2007) | | | |
| 3 | AMENDMENTS | | | |
| | Amendments (revisions) to the approved maintenance programme should be made by the owner to reflect changes: | | | |
| | a. In the TC holder's recommendations | | | |
| | b. Introduced by modifications | | | |
| | c. Introduced by repairs | | | |
| | d. Discovered by service experience | | | |
| | e. As required by the AAC | | | |
| 4 | PERMITTED VARIATIONS TO MAINTENANCE PERIODS (with the exception of items identified in 1.1.16) | | | |
| | The owner or approved organisation may only vary the periods prescribed by the programme with the approval of the competent authority or through a procedure developed in the maintenance programme and approved by the competent authority. | | MCM Chap:..... | |

| | Details | Compliance Y/N/NA | Manual (MCM/MP) References/Notes | AAC Remark |
|------------|---|-------------------|----------------------------------|------------|
| 5 | PERIODIC REVIEW OF MAINTENANCE PROGRAMME CONTENTS | | | |
| 5.1 | Periodic review to ensure that the programme reflects current: | | | |
| | a. TC holder's recommendations | | | |
| | b. Revisions to the MRB report (if applicable) | | | |
| | c. Mandatory requirements | | | |
| | d. Maintenance needs of the aircraft | | | |
| 5.2 | Annual review defined | | | |
| 6. | RELIABILITY PROGRAMMES | | | |
| 6.1 | Applicability | | | |
| 6.1.1 | A reliability programme should be developed in the following cases: | | | |
| (a) | the aircraft maintenance programme is based upon MSG-3 logic | | | |
| (b) | the aircraft maintenance programme includes condition monitored components | | | |
| (c) | the aircraft maintenance programme does not contain overhaul time periods for all significant system components | | | |
| (d) | when specified by the Manufacturer's maintenance planning document or MRB. | | | |
| 6.1.2 | A reliability Programme need not be developed in the following cases: | | | |
| (a) | the maintenance programme is based upon the MSG-1 or 2 logic but only contains hard time or on condition items | | | |
| (b) | Not a large aircraft (= or < 5700 kgs MTWA or single engined helicopter) | | | |
| (c) | the aircraft maintenance programme provides overhaul time periods for all significant system components. <i>Note : for the purpose of this item, a significant system is a system the failure of which could hazard the aircraft safety.</i> | | | |
| 6.1.3 | Notwithstanding paragraphs 6.1.1 and 6.1.2 above, an Operator may however, develop its own reliability monitoring programme when it may be deemed beneficial from a maintenance planning point of view. | | | |
| 6.2 | Applicability for operator of small fleets of aircraft | | | |
| 6.2.1 | Less than 6 aircraft of the same type | | | |
| 6.2.2 | The requirement for a reliability programme is irrespective of the operator's fleet size. | | | |
| 6.2.3 | Tailor reliability programmes to suit the size and complexity of operation | | | |
| 6.2.4 | Use of "Alert levels" should be used carefully | | | |
| 6.2.5 | An operator of a small fleet of aircraft, when establishing a reliability programme, should consider the following: | | | |
| | a. Focus on areas where a sufficient amount of data is likely to be processed | | | |
| | b. How is engineering judgement applied? <i>Note: When alert levels are used, a single event may have the figures reach the alert level. Engineering judgement is necessary so as to discriminate an artefact from an actual need for a corrective action.</i> | | | |
| 6.2.6 | Pool data and analysis (paragraph 6.6 specifies conditions) | | | |
| 6.2.7 | If unable to pool data / additional restrictions on the MRB/MPD tasks intervals specified | | | |
| 6.3 | Engineering judgement. | | | |

| | Details | Compliance Y/N/NA | Manual (MCM/MP) References/Notes | AAC Remark |
|------------|--|-------------------|----------------------------------|------------|
| 6.3.1 | Are there appropriately qualified personnel (with appropriate engineering experience and understanding of reliability concept) for the reliability programme? | | | |
| 6.3.2 | It follows that failure to provide appropriately qualified personnel for the reliability programme may lead the competent authority to reject the approval of the reliability programme and therefore the aircraft maintenance programme. | | | |
| 6.4 | Contracted maintenance. | | | |
| 6.4.1 | Maintenance programme / may delegate certain functions to the an Approved/accepted maintenance organisation | | | |
| 6.4.2 | These functions are: | | | |
| | a. Developing the maintenance and reliability programmes | | | |
| | b. Collection and analysis of the reliability data | | | |
| | c. Providing reliability reports | | | |
| | d. Proposing corrective actions | | | |
| 6.4.3 | Approval to implement a corrective action prerogative and responsibility: <i>In relation to paragraph 6.4.2(d) above, a decision not to implement a corrective action should be justified and documented.</i> | | | |
| 6.4.4 | Maintenance contract between the Operator and Approved Maintenance should be specified in the maintenance contract and relevant MPM, MCM procedures | | MCM Chap: MPM Chap: | |
| 6.5 | Reliability programme | | | |
| 6.5.1 | Objectives | | | |
| 6.5.1.1 | A statement should be included summarising as precisely as possible the prime objectives of the programme. To the minimum it should include the following: | | | |
| (a) | to recognise the need for corrective action, | | | |
| (b) | to establish what corrective action is needed and, | | | |
| (c) | to determine the effectiveness of that action | | | |
| 6.5.1.2 | The extent of the objectives should be directly related to the scope of the programme. <i>The manufacturer's maintenance planning documents may give guidance on the objectives and should be consulted in every case.</i> | | | |
| 6.5.1.3 | All MSG-3 related tasks are effective and their periodicity is adequate | | | |
| 6.5.2 | Identification of items. The items controlled by the programme should be stated, e.g. by ATA Chapters. Where some items (e.g. aircraft structure, engines, APU) are controlled by separate programmes, the associated procedures (e.g. individual sampling or life development programmes, constructor's structure sampling programmes) should be cross referenced in the programme. | | | |
| 6.5.3 | Terms and definitions. The significant terms and definitions applicable to the Programme should be clearly identified. Terms are already defined in MSG-3 and CV-CARs | | | |
| 6.5.4 | Information sources and collection. | | | |
| 6.5.4.1 | Sources of information should be listed and procedures for the transmission of information from the sources, together with the procedure for collecting and receiving it, should be set out in detail in the MCM or MPM as appropriate. | | | |
| 6.5.4.2 | Type of information to be collected should be related to the objectives, examples of the normal prime sources: | | | |

| | Details | Compliance Y/N/NA | Manual (MCM/MP) References/Notes | AAC Remark |
|---------|--|-------------------|----------------------------------|------------|
| (a) | Pilots Reports. | | | |
| (b) | Technical Logs. | | | |
| (c) | Aircraft Maintenance Access Terminal / On-board Maintenance System readouts. | | | |
| (d) | Maintenance Worksheets. | | | |
| (e) | Workshop Reports. | | | |
| (f) | Reports on Functional Checks. | | | |
| (h) | Reports on Special Inspections | | | |
| (g) | Stores Issues/Reports. | | | |
| (i) | Air Safety Reports. | | | |
| (j) | Reports on Technical Delays and Incidents. | | | |
| (k) | Other sources: ETOPS, RVSM, CAT II/III. | | | |
| 6.5.4.3 | In addition to the normal prime sources of information, due account should be taken of continuing airworthiness and safety information promulgated under CV-CAR 5 | | | |
| 6.5.5 | Display of information. Collected information may be displayed graphically or in a tabular format or a combination of both. The format should be such that the identification of trends, specific highlights and related events would be readily apparent. | | | |
| 6.5.5.1 | The above display of information should include provisions for "nil returns" to aid the examination of the total information. | | | |
| 6.5.5.2 | Where "standards" or "alert levels" are included in the programme, the display of information should be oriented accordingly. | | | |
| 6.5.6 | Method for examining, analysing and interpreting the information should be explained | | | |
| 6.5.6.1 | Examination. Methods of examination of information may be varied according to the content and quantity of information of individual programmes. | | | |
| 6.5.6.2 | Analysis and Interpretation. The procedures for analysis and interpretation of information should be such as to enable the performance of the items controlled by the programme to be measured; they should also facilitate recognition, diagnosis and recording of significant problems. The whole process should be such as to enable a critical assessment to be made of the effectiveness of the programme as a total activity. Such a process may involve: | | | |
| (a) | Comparisons of operational reliability with established or allocated standards (in the initial period these could be obtained from in-service experience of similar equipment of aircraft types). | | | |
| (b) | Analysis and interpretation of trends. | | | |
| (c) | The evaluation of repetitive defects. | | | |
| (d) | Confidence testing of expected and achieved results. | | | |
| (e) | Studies of life-bands and survival characteristics. | | | |
| (f) | Reliability predictions. | | | |
| (g) | Other methods of assessment. | | | |
| 6.5.6.3 | The range and depth of engineering analysis and interpretation should be related to the particular programme and to the facilities available. The following, at least, should be taken into account: | | | |
| (a) | Flight defects and reductions in operational reliability. | | | |
| (b) | Defects occurring on-line and at main base. | | | |
| (c) | Deterioration observed during routine maintenance. | | | |
| (d) | Workshop and overhaul facility findings. | | | |
| (e) | Modification evaluations. | | | |
| (f) | Sampling programmes. | | | |

| | Details | Compliance Y/N/NA | Manual (MCM/MP) References/Notes | AAC Remark |
|---------|---|----------------------|-------------------------------------|---------------|
| (g) | The adequacy of maintenance equipment and publications. | | | |
| (h) | The effectiveness of maintenance procedures. | | | |
| (i) | Staff training. | | | |
| (j) | Service bulletins, technical instructions, etc. | | | |
| 6.5.6.4 | Contracted maintenance - arrangements established and details for information input included | | | |
| 6.5.7 | Corrective Actions. | | | |
| 6.5.7.1 | The procedures and time scales both for implementing corrective actions and for monitoring the effects of corrective actions should be fully described. Corrective actions shall correct any reduction in reliability revealed by the programme and could take the form of: | | | |
| (a) | Changes to maintenance, operational procedures or techniques. | | | |
| (b) | Maintenance changes involving inspection frequency and content, function checks, overhaul requirements and time limits, which will require amendment of the scheduled maintenance periods or tasks in the approved maintenance programme. This may include escalation or de-escalation of tasks, addition, modification or deletion of tasks. | | | |
| (c) | Amendments to approved manuals (e.g. maintenance manual, crew manual). | | | |
| (d) | Initiation of modifications. | | | |
| (e) | Special inspections of fleet campaigns. | | | |
| (f) | Spares provisioning. | | | |
| (g) | Staff training. | | | |
| (h) | Manpower and equipment planning. | | | |
| 6.5.7.2 | The procedures for effecting changes to the maintenance programme should be described, and the associated documentation should include a planned completion date for each corrective action, where applicable. | | | |
| 6.5.8 | Organizational Responsibilities. The organisational structure and the department responsible for the administration of the programme should be stated. The chains of responsibility for individuals and departments (Engineering, Production, Quality, Operations etc.) in respect of the programme, together with the information and functions of any programme control committees (reliability group), should be defined. Participation of the competent authority should be stated. This information should be contained in the MCM or MPM as appropriate. | | | |
| 6.5.9 | Presentation of information to the competent authority. The following information should be submitted to the competent authority for approval as part of the reliability programme: | | | |
| (a) | The format and content of routine reports. | | | |
| (b) | The time scales for the production of reports together with their distribution. | | | |
| (c) | The format and content of reports supporting request for increases in periods between maintenance (escalation) and for amendments to the approved maintenance programme. These reports should contain sufficient detailed information to enable the competent authority to make its own evaluation where necessary. | | | |

| | Details | Compliance Y/N/NA | Manual (MCM/MP) References/Notes | AAC Remark |
|----------|--|-------------------|----------------------------------|------------|
| 6.5.10 | Evaluation and review. Each programme should describe the procedures and individual responsibilities in respect of continuous monitoring of the effectiveness of the programme as a whole. The time periods and the procedures for both routine and non-routine reviews of maintenance control should be detailed (progressive, monthly, quarterly, or annual reviews, procedures following reliability “standards” or “alert levels” being exceeded, etc.). | | | |
| 6.5.10.1 | Each Programme should contain procedures for monitoring and, as necessary, revising the reliability “standards” or “alert levels”. The organisational responsibilities for monitoring and revising the “standards” should be specified together with associated time scales. | | | |
| 6.5.10.2 | Although not exclusive, the following list gives guidance on the criteria to be taken into account during the review. | | | |
| (a) | Utilisation (high/low/seasonal). | | | |
| (b) | Fleet commonality. | | | |
| (c) | Alert Level adjustment criteria. | | | |
| (d) | Adequacy of data. | | | |
| (e) | Reliability procedure audit. | | | |
| (f) | Staff training. | | | |
| (g) | Operational and maintenance procedures. | | | |
| 6.5.11 | Approval of maintenance programme amendment | | | |
| | The competent authority may authorise the operator to implement maintenance programme changes arising from the reliability programme results : | | | |
| (a) | Does the reliability programme monitor the content of the maintenance programme in a comprehensive manner? | | | |
| (b) | Is appropriate control exercised by the owner / operator over the internal validation of such changes? | | | |
| 6.6 | Pooling Arrangements. | | | |
| 6.6.1 | In some cases, in order that sufficient data may be analysed it may be desirable to “pool” data: i.e. collate data from a number of other organisations of the same type of aircraft. For the analysis to be valid, the aircraft concerned, mode of operation, and maintenance procedures applied must be substantially the same: | | | |
| | Variations in utilisation between two M.A.Subpart G organisations may more than anything, fundamentally corrupt the analysis. Although not exhaustive the following list gives guidance on the primary factors which need to be taken into account. | | | |
| (a) | Certification factors, such as: aircraft TCDS compliance (variant) / modification status, including SB compliance. | | | |
| (b) | Operational Factors, such as: operational environment / utilisation, e.g. low/high/seasonal etc / respective fleet size operating rules applicable (e.g. ETOPS/RVSM/All Weather etc.) / operating procedures / MEL and MEL utilisation | | | |
| (c) | Maintenance factors, such as: aircraft age maintenance procedures; maintenance standards applicable; lubrication procedures and programme; MPD revision or escalation applied or maintenance programme applicable. | | | |
| 6.6.2 | Is there a substantial amount of commonality/ has the AAC agreed? | | | |

| | Details | Compliance Y/N/NA | Manual (MCM/MP) References/Notes | AAC Remark |
|----------|--|----------------------|-------------------------------------|---------------|
| 6.6.3 | In case of a short term lease agreement (less than 6 month) more flexibility against the para 6.6.1 criteria may be granted by the competent authority, so as to allow the owner/operator to operate the aircraft under the same programme during the lease agreement affectivity. | | | |
| 6.6.4 | Changes to any maintenance organization requires assessment in order that the pooling benefits can be maintained. Where an organisation wishes to pool data in this way, the approval of the competent authority should be sought prior to any formal agreement being signed between operator and the organisation | | | |
| 6.6.5 | Reliability programme managed by the aircraft manufacturer if agreed by the AAC | | | |
| 7 | AAC REQUIRED ITEMS | | | |
| 7.1 | Details of who may issue a CRS | | | |
| 7.2 | Define which inspections/checks are considered to be base maintenance | | | |
| 7.3 | AAC Maintenance Requirements, in the absence of specific recommendations. | | | |
| 7.3.1 | Aircraft battery capacity check/deep cycle? | | | |
| 7.3.2 | Emergency equipment | | | |
| 7.3.3 | Emergency escape provisions: | | | |
| | a. Portable valise type life-rafts | | | |
| | b. Door & escape chutes/slides | | | |
| | c. Emergency exits / hatches | | | |
| 7.3.4 | Flexible hoses | | | |
| 7.3.5 | Fuel / oil system contamination checks | | | |
| 7.3.6 | Pressure vessels | | | |
| 7.3.7 | Seat belts and harnesses | | | |
| 7.3.8 | AAC Advisory Circulars – applicability | | | |
| 7.3.9 | Vital points and control systems | | | |
| 7.3.10 | TC Specifications. See Applicable airworthiness code and applicable CV-CAR | | | |
| 7.3.11 | Maintenance applicable to special operations approvals, if applicable: | | | |
| | AWOPS | | | |
| | MNPS | | | |
| | RVSM | | | |
| | ETOPS/EDTO | | | |
| | PBN | | | |
| | Other (Specify)..... | | | |
| 7.3.12 | Customer furnished equipment | | | |
| 7.3.13 | Engine & APU condition monitored maintenance | | | |
| 7.3.15 | Flight data recorder systems | | | |
| 7.3.16 | Mode "S" transponder ICAO 24-bit aircraft addresses | | | |
| 7.3.17 | In-flight entertainment systems (IFE) | | | |
| 7.3.18 | Mode S and ADS-B Surveillance data items (IR 1207/2011, Article 7.2) | | | |

| | Details | Compliance Y/N/NA | Manual (MCM/MP) References/Notes | AAC Remark |
|--|---------|----------------------|-------------------------------------|---------------|
| COMPLIANCE STATEMENT | | | | |
| This Aircraft Maintenance Programme complies with the manufacturer's minimum maintenance & inspection requirements and the requirements of the Cabo-Verde Civil Aviation Authority (AAC) for the airframe, engines (on-wing), systems and components except wherein previously or hereby approved by owner/operator. | | | | |
| Name: | | Position: | | |
| Signature: | Date: | Organisation Stamp: | | |

ANNEX C - MAINTENANCE PROGRAMME PREFACE

In the preparation of this Maintenance Programme to meet the requirements of AAC CV-CAR 9 or 8, the recommendations made by the airframe constructors and engine, APU, propeller and equipment manufacturers have been evaluated and, where appropriate, have been incorporated.

This Maintenance Programme lists the tasks and identifies the practices and procedures, which form the basis for the scheduled maintenance of the aeroplane(s) / helicopter(s).

The Operator/owner* undertakes to ensure that the aeroplane(s) / helicopter(s) will continue to be maintained in accordance with this programme.

The data contained in this programme will be reviewed for continued validity at least annually in the light of operating experience and instructions from the AAC whilst taking into account new and / or modified maintenance instructions promulgated by the type certificate and supplementary type certificate holders and any other organisation that publishes such data in accordance with applicable airworthiness code or CV-CAR 5.

It is accepted that this programme does not prevent the necessity for complying with any new or amended regulation published by the AAC from time to time where these new or amended regulations may override elements of this programme.

It is understood that compliance with this programme alone does not discharge the operator from ensuring that the programme reflects the maintenance needs of the aeroplane, such that continuing safe operation can be assured. It is further understood that the AAC reserves the right to suspend, vary or cancel approval of the Maintenance Programme if the AAC has evidence that the requirements of the Maintenance Programme are not being followed or that the required standards of airworthiness are not being maintained.

Name

Position.....Signed.....

..... For and on behalf of the Operator / owner*:

..... Date:

NOTE: The post holder identified above is either the Accountable Manager / Maintenance Manager for an AOC operator's, or the aircraft owner when the aircrafts continuing airworthiness is not contracted to an approved organisation.

* Delete as applicable