

Leaflet C-165 **Guidance and Explanatory Notes on how to use the Generic Maintenance Programme Template (GMPT)**

Applicable to: Piston engine fixed wing or single piston engine helicopters with a MTOM of 2730 kg or less.

1. Introduction

This document provides guidance and instructions on how to fully populate the United Kingdom Civil Aviation Authority Generic Maintenance Programme Template (GMPT) to become the Approved Maintenance Programme (AMP) for a specific aircraft. It is strongly recommended that, before attempting to customise/populate the GMPT, the Aircraft owner/Operator reader familiarise themselves with EC Regulation EC 2042/2003 Part M, in particular M.A.201 (Responsibilities), M.A.302 (Aircraft Maintenance Programmes), M.A.305 (Aircraft Continuing Airworthiness Records System), M.A.401 (Maintenance Data), M.A.402 (Performance of Maintenance) and M.A.710 (Airworthiness Review). The GMPT has been introduced to fully replace CAA publication CAP 766 and 767 the Light Aircraft Maintenance Programmes (LAMP) and reflects the legal requirement that an aircraft must be maintained to an Approved Maintenance Programme as defined in Part M. The GMPT may be used to develop a maintenance programme that will satisfy this requirement. Careful consideration has been given to ensure that the GMPT is easy to populate and provides a standardised maintenance programme format aimed at eliminating much of the variance of standards applied experienced with its predecessor - LAMP.

1.1 The principles of maintenance programmes and records of maintenance compliance are explained in more detail below:

- a) The GMPT is the starting point from which a maintenance programme for a particular aircraft can be developed. The GMPT when populated with the manufacturers recommended schedule of maintenance instructions (tasks) together with customised tasks (life limited tasks, components, mandatory requirements etc) can then become an Approved Maintenance Programme (AMP). The maintenance programme belongs to the specific aircraft, it lists all the tasks required, and where necessary the justification for deviating from, or for not doing a task recommended by the appropriate design approval holder.
- b) The maintenance programme can be kept in hard copy or held in a computer database. The important point is that at any time the maintenance programme can be produced and shown in its entirety, as a standalone document which contains all applicable scheduled maintenance tasks and their accomplishment intervals.
- c) From the maintenance programme the planning & records system can be developed and populated, recording compliance with the requirements (tasks) of the maintenance programme.

Thus, ensuring that at any time compliance with the programme can be demonstrated.

Note: The maintenance programme and the planning & records system are two distinct entities, but they could reside in one (computer) system.

- 1.2 Once fully customised/populated, and approved, the AMP will enable aircraft with a MTOW of 2730kg and below to be maintained in a clear, straightforward and compliant manner whilst ensuring the maintenance remains applicable and effective.

Whilst Part M allows an aircraft to be managed by its owner, it is recommended that the owner enters into a formal contract with a Continuing Airworthiness Management Organisation (CAMO), who will be able, to develop the AMP specific requirements for a particular aircraft, taking into account the type of operation envisage and the needs of the owner/operator.

2. Terminology

- 2.1 The following is intended to clarify terminology found in the Part M, the GMPT and associated guidance material in this leaflet.

- 2.2 **Maintenance Programme** – When producing the Maintenance Programme the Owner/Operator must ensure the following sources of continuing airworthiness information are identified, investigated, assessed and, when applicable, incorporated into what will become the Approved Maintenance Programme (AMP).

A document based on the Instructions for Continuing Airworthiness (ICA) developed by the aircraft, engine, propeller and equipment manufacturers (Design Approval Holders).

Vendors/Original Equipment Manufacturers (OEM's), and organisations who have designed and produced approved modifications for an aircraft (STC Holders).

The programme must define specific inspection tasks, component lives, replacement intervals applicable Airworthiness Directives where there is a repetitive inspection or replacement task and other service data such as Service Bulletins detailing additional ICA together with the task accomplishment interval. The Competent Authority (CA) (e.g. CAA), may also specify additional tasks to be included which may not have been developed by the TC Holders, STC Holders and Vendors/OEM's.

The aircraft's Certificate of Airworthiness will only remain in force if the AMP is adhered to thus ensuring its Airworthiness Review Certificate remains valid. Should any of the AMP content be missed or ignored then the aircraft may not fly until full compliance with the AMP has been re-established. An Airworthiness Review Certificate (ARC) may only be issued or extended on the basis of full compliance with the AMP.

- 2.3 **Type Certificate** – Is the document produced by a CA which defines a product, an aircraft engine or propeller. The type certificate forms the basis approval of

the design and is usually issued to the original manufacturer e.g. Cessna, Piper, Lycoming. The type certificate maybe transferred to another organisation for commercial reasons or sometimes following a manufacturer ceasing trading. The Type Certificate Holder (TCH) is the organisation or body that has current ownership of the Type Certificate and is responsible for providing instructions for continuing airworthiness.

- 2.4 **Continuing Airworthiness** – Is a term used to describe how the aircraft remains in a safe, airworthy and regulatory compliant state. Continuing Airworthiness is not so much a `condition`, it is a process that combines the inputs from relevant parties such as aircraft, engine, propeller and equipment manufacturers (TC Holders), originators or owners of modifications such as design organisations (STC Holders), Vendors / OEM's and regulatory authorities who have a responsibility to produce Instruction for Continuing Airworthiness (ICA).
- 2.5 **Instructions for Continuing Airworthiness (ICA)** – Are those recommendations or instructions found in maintenance manuals, modification documents and service data such as bulletins and letters, and should be used as the basis of the approved maintenance programme. These instructions have been written by the TC holders, OEM's and STC holders with specific knowledge of how their product performs and when it is likely that these products will require some action, such as, inspection, lubrication, servicing, overhaul or replacement in order to ensure the aircraft remains in airworthy condition. ICA are often supplemented by additional material produced by competent authorities when it is considered necessary.
- 2.6 **Service Bulletin / Letter** – The wording and terminology used – recommended, mandatory etc - by TC & STC holders is not always as clear as would be desirable, especially where there are concerns of commercial liability and the accomplishment of potential litigation. However, the following paragraphs explain regulatory expectations regarding Service Bulletins and Letters.
- 2.6.1 Whilst Service Bulletins and other service data are not mandatory , all such data produced by a responsible organisation are ICA, and may require compliance. These ICA must be assessed, evaluated and applied when appropriate; indeed it is a Part M requirement to do so. Such assessment should include ascertaining which tasks are of a continuing airworthiness nature over those simply offering a product improvement. If they are not applicable, or if they have been satisfied by another means, the result of the assessment must be recorded in the aircraft's records. Where the decision is made not to comply with the instructions, a technical rationale must be included with the aircrafts records. In the event that the instructions may be satisfied by a means other than those defined by their originator, those proposed alternative means of compliance must be appropriately approved. A 'do nothing' approach is not acceptable.
- 2.6.2 If a Service Bulletin or Letter has been issued to address a continuing airworthiness issue or potential safety concern it should be applied.

For example, a Service Bulletin requiring the replacement of aluminium electrical wiring for copper versions due to a risk of overheating and subsequent burning should, be embodied whereas one offering an option to replace clear transparencies with tinted alternatives, and is not identified as being the result of any safety risk, is clearly a product improvement, which should be regarded

as optional. Similarly, Service Letters are often used by engine manufacturers to publish overhaul periods for the various type of engines they produce. These time-between-overhaul (TBO) periods are universally accepted as the primary limit applied to in-service engines. See Part M, Appendix III for an example.

2.7 TC and STC Holder Recommendations – These are acknowledged as ‘Acceptable Means of Compliance’. The wording and terminology often used by TC and STC holders is not always clear, therefore the following paragraphs clarify regulatory expectations regarding ‘recommendations’.

2.7.1 Maintenance programmes are based on data, in the form of ‘recommendations’ made by TC / STC Holders and Vendors/OEM’s. A fully customised light aircraft maintenance programme for an aircraft below 2730 kg must reflect TC/STC holder and Vendor/OEM recommendations, ICA and any additional regulatory requirements, including periodicities. If the GMPT reflects the appropriate recommendations there should be no problem in gaining approval of the maintenance programme.

2.8 Continuing Airworthiness Management Organisation (CAMO) – Is an organisation approved in accordance with Part M, Subpart G, to manage the continuing airworthiness of an aircraft. The organisation is responsible for arranging maintenance, plus maintaining and keeping the required records for an aircraft when contracted by an owner. The CAMO may also be approved in accordance with Part M, sub-part I to issue and extend the validity of an Airworthiness Review Certificates (ARC).

A CAMO may also hold an additional privilege known as ‘Indirect Approval’ which allows the CAMO to approve a customised GMPT, including amendments, in accordance with approved procedures, without the direct involvement from the CAA.

2.9 Approval of Aircraft Maintenance Programme (AMP) – this is the process of ensuring that the GMPT has been compiled and developed appropriately prior to being approved for a specific aircraft.

The approval options available to owners of GA aircraft, which are not used for Commercial Air Transport are:

- 1) The owner self manages the maintenance programme and contracts a CAMO to approve it.
- 2) Contract a CAMO to manage and develop the maintenance programme whilst retaining responsibility for compliance;
- 3) Contract a CAMO to manage & develop the maintenance programme, and ensure compliance;
- 4) Apply to the CAA to approve the proposed maintenance programme directly (subject to the ANO Scheme of Charges), with the owner retaining responsibility for compliance.

NOTE: It must be understood that the aircraft may not be maintained to a maintenance programme unless it has been approved as above and includes the specific aircraft registration included in the scope of the programme.

2.10 **Periodic Review of the AMP** -The Approved Maintenance Programme (AMP) should be reviewed at least annually and amended if required. The purpose of the review is to ensure that the programme continues to be valid in the light of the operating experience. It should take into account any new or modified instructions published by the CAA, EASA, State of Design, Type Certificate Holder (TCH), Supplementary Type Certificate Holder (STCH) and any other organisation that is required to publish such data. Owners/Operators may also choose to contract a CAMO to perform this review task.

2.10.1 When new or revised non-mandatory instructions have been published in the form of Service Bulletins or other similar documents, the Owner/Operator/CAMO must consider the relevance of the instructions, taking into account the type of operations being undertaken. Before making a decision not to incorporate new or revised instructions into the AMP, careful consideration should be given to the potential consequences of this course of action, as the AMP is based on a 'preventative maintenance' concept. Where it is decided not to adopt the new or revised instructions, an entry should be made in the relevant chapter of the AMP to record the rationale for this decision and applicable alternative instructions. Following the principles of Part M, the record should provide visibility, accountability and justification. If the type of operation subsequently changes, such as changing from operating Visual Flight Rules (VFR) to Instrument Flight Rules (IFR) or the aircraft utilisation changes significantly, the aircraft Owner/Operator must establish if further revision to the AMP is necessary.

NOTE: The owner/operator is ultimately responsible and therefore accountable for the airworthiness of their aircraft. To exercise this responsibility the operator should be satisfied that the actions taken by a contracted CAMO meet the standards required by M.A. Subpart G. The owner/operator's management of such activities should therefore be accomplished by:

- a) active control through direct involvement, and/or;
- b) endorsing the recommendations made by the contracted CAMO.

2.11 **Aircraft Continuing Airworthiness Monitoring (ACAM)** – there is a legal obligation for the competent authority to sample the fleet of aircraft on its register. This process is carried out by CAA Airworthiness Surveyors who will sample; the physical condition of the aircraft, the flight manual, the current mass and balance document and aircraft records, including the content of, and compliance with, the AMP. Any issues, non-compliances and observations will be identified at the end of the ACAM survey with a hand written report being presented at the time followed by a formal report sent from the relevant regional office to the owner. Both will require attention and appropriate rectification action to be carried out to the satisfaction of the competent authority within the timescales quoted on the report/s. Failure to address any issues can lead to action being taken against the approval of the contracted CAMO, or withdrawal of the aircraft's Certificate of Airworthiness.

2.12 **Variations** – this is the term given to 'extending' the interval between the accomplishment of a maintenance task, more often referred to in the GA world as 'extensions'. In exceptional circumstances the compliance time of tasks in the maintenance programme can be extended by a limited period of time until the required check is performed. The permitted variation periods are defined in the maintenance programme, guidance on their use is provided below.

The guidance wording used for variations has often been misunderstood and sometimes misused in the belief that a variation, or extension, would give extra time for free. Whilst the GMPT includes the ability to apply variations the acceptable criteria to justify such a variation should be understood and applied.

2.12.1 A variation is not a facility which can be applied time after time in order to extend the period between maintenance inputs. Careful consideration must be given to the reasons for requesting or applying such a variation. Only reasons which could not have been reasonably foreseen are acceptable. The following are examples, and are by no means exhaustive, of acceptable and non-acceptable reasons:

- a) Running out of hours just before a weekend with the aircraft needed for bookings over the weekend is not appropriate justification. This is indicative of poor planning and should not result in a variation being granted.
- b) Having other business crop up which conflicts with a booked maintenance slot is, again, not appropriate justification and should not result in a variation being granted.
- c) Running out of hours/under time before an aircraft is due to fly to another airfield for maintenance is not appropriate justification. Again this is indicative of poor planning and should not result in a variation being granted.
- d) Planning and booking, maintenance which, when due, is no longer possible due to staff illness would be an appropriate justification for a variation, it is an unforeseen circumstance.
- e) Bad weather on the day of flying to another airfield for pre-arranged maintenance would also be an appropriate justification for a variation; it is an unforeseen circumstance.

2.12.2 It is not acceptable to accrue variations, the effect on airworthiness can be detrimental and the management of lifed items can become difficult. Variations cannot be applied which conflicts with the due date of an Airworthiness Directive, lifed item or similar, therefore careful consideration should be given on a case by case basis.

- NOTES:**
- 1) Variations may **not** be applied to applicable airworthiness life limitations, Airworthiness Directives, Generic Requirements or overhaul and test periods.
 - 2) Variations for tasks controlled by flying hours should not be understood to be a maintenance planning tool, but as an exceptional means to allow the operator to fly for a limited period of time until the required maintenance is performed.
 - 3) Any application of a variation to the maintenance check cycle period must be recorded in the appropriate log book(s) together with the reason and justification for the variation by a person who is authorised to sign the log book entry for that particular check. Details of the variation must be made visible to the pilot.
 - 4) Variations are not required to be deducted from the next scheduled check.

3. Pilot Owner Maintenance

- 3.1 There is a provision in Part M that permits a Pilot Owner to carry out limited maintenance tasks (Part M.A.803 defines 'Pilot Owner'). Such tasks are defined in Appendix VIII and associated AMC and may only be carried out on a privately owned and operated aircraft. Pilot owner maintenance is subject to specific conditions, this document explains those conditions together with highlighting some of the potential pitfalls.
- 3.2 **Maintenance Tasks** – any maintenance tasks undertaken must be accomplished strictly in accordance with the maintenance programme and must reflect those listed in Part M Appendix VIII. No other maintenance tasks may be performed using the Pilot Owner privilege. Any task which may be considered a 'safety critical task', which directly affects the airworthiness and safety of the aircraft, may not be carried out by the Pilot Owner. This is an important consideration when planning any work as it may be the case that such tasks are encountered part way through maintenance and may preclude the completion of such maintenance. This may render the aircraft grounded and could be costly if an appropriately qualified aircraft engineer has to attend away from his or her normal working base.
- 3.3 **Certification** – full details of any work undertaken by the Pilot Owner must be recorded in the appropriate Aircraft, Engine or Propeller log book and be certified in the appropriate column of the log book page by the Pilot Owner by signing, dating and quoting his / her pilots licence number. It is important that the Pilot Owner understands the responsibility and liability associated with undertaking such work and making certifications of this nature as he / she assumes complete responsibility for the work undertaken.
- 3.4 **Records** – any maintenance carried out by the Pilot Owner must be properly recorded. It must include full details of all work undertaken, details of parts used including part numbers, reference to the approved documentation accompanying such parts, the specific maintenance manual task references against each task carried out and the revision state of such manuals. As all such records form part of the aircraft's technical history these records must be retained in exactly the same way as with an approved organisation and must be retained with the aircraft's records in accordance with Part M, i.e. kept safe from damage, theft and alteration. Any such records will be required by the CAMO at time of ARC issue/extension. In the event such records have been lost, or are incomplete, then the work already completed will have to be re-inspected or even carried out again.

Supplement 3 to this leaflet provides a suggested check list of the records and periods of retention.

- 3.5 **Tooling** – all tooling used in the performance of maintenance tasks must be appropriate for those tasks. Such tooling is often expensive to buy and when tools such as torque wrenches are required then these must be regularly calibrated in exactly the same way as an approved organisation's tooling. Evidence of appropriate calibration, such as certificates, must be retained. Calibration must be traceable to national standards. It should be understood that if an aircraft is surveyed by the competent authority, then the Airworthiness Surveyor has the right to request evidence of calibration records in order to establish that the work has been carried out to the proper standards.

- 3.6 **Maintenance Data** – all work undertaken by the Pilot Owner must be carried out strictly in accordance with the appropriate manuals. As with approved organisations such manuals must be applicable to the particular aircraft and be up to date, Ref Part M, M.A.401(c) & AMC M.A.401(c). When undertaking a scheduled maintenance inspection, such as a 50 hour check, the Pilot Owner must have all applicable data readily to hand bearing in mind that such data may not be limited to the aircraft maintenance manual but may also include engine manuals and parts catalogues.
- 3.7 **Competence** – in order to exercise the privilege of Pilot Owner maintenance, he / she must satisfy themselves that they are competent to undertake the task/s. If any doubt exists, then the work must not be attempted. The Pilot Owner must have sufficient engineering skill not only to carry out the task but also be able to interpret and apply the associated maintenance data. Techniques such as wire locking must be performed to the same standard as that expected of a professional aircraft engineer. In assessing competence to undertake a task it is also important that consideration be given to any required task resulting from disturbance associated with performing the initial task.
- 3.8 **Use of Approved Parts** – any parts used in the maintenance or repair of an aircraft must be approved for that application. Details of acceptable parts are found in the aircraft, engine and equipment illustrated parts catalogues and may not be deviated from without appropriate TC or STC Holder approval. Any parts used must also be accompanied by acceptable release documentation; care should be exercised when procuring parts to ensure they are provided with release documentation acceptable to EASA. Where doubt exists then an approved organisation or the competent authority should be consulted. An additional consideration when procuring parts is that of bogus parts, such parts are illegal to install and could jeopardise the safety of the aircraft. Bogus parts may have found their way into the supply chain from inappropriate sources and may even be accompanied by very convincing paperwork, extreme care should be taken to carefully examine parts received for signs of damage, questionable construction, inappropriate packaging etc Parts should only be procured from established and credible sources. It should also be understood that, whilst the appearance and apparent function of automotive components may appear the same as their aviation counterparts the pilot owner should never be tempted to use such parts as, not only will their use invalidate the C of A but safety could also be compromised. Electrical terminals and lamps are typical of components often mistaken as being acceptable, however the materials used in their construction are often quite different and not always apparent from a casual glance.
- 3.9 **Consumable Materials used in Maintenance** – The handling and use of materials used in aircraft maintenance can have potentially detrimental effects on health. Materials such as battery acid can cause serious burns, oils, sealants and lubricants can cause skin irritation or worse and aerosols containing primers and paints can be carcinogenic. Appropriate clothing and safety equipment should be used, with material data sheets always be followed and as they typically include details of required medical attention should it be necessary.
- 3.10 **Facilities** – maintenance should not be undertaken when the environmental conditions could have a detrimental effect to the aircraft. No component should be removed, or panels opened exposing the aircraft when inclement conditions exist, e.g. rain, snow, dust and other potential contamination. Work should,

whenever possible be carried out under cover and with due regard to human factors. Work should not be undertaken in poor lighting conditions or uncomfortable temperatures as such conditions may encourage mistakes. Further, consideration should also be given to the provision of compressed air, adequate lighting and the provision of appropriate access equipment etc.

4. Any queries or further guidance required should be addressed to:

AirworthinessPolicy@caa.co.uk

Fig 1 - Customising the GMP

