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RAVENAIR ENGINEERING

3rd PARTY AIRCRAFT OWNER GUIDANCE

Version 1.0

WELCOME

Thank you for choosing Ravenair for your aircraft engineering solutions. We have been operating since 1980 and are experts in our field, with both Part-145 and Part-CAMO approvals, and their equivalent national approvals.

We have created this document to help assist you, and anyone who flies your aircraft, in using our specific systems to ensure safe and efficient maintenance of your aircraft.

Using this document will help you with using Ravenair procedures to ensure the safe and efficient maintenance of your aircraft. This should be read in conjunction with UK CAA CAP2400, "The Airworthiness Code" - this is a helpful guide to aircraft maintenance.

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SECTION 01

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SECTION
01

Regulation and Types of Engineering Support

Types of Maintenance Programme

There are different types of maintenance programme and associated regulations. As this is rarely taught during theoretical knowledge training, we recognise that understanding these different options can be a challenge. We have therefore included this section which is a summarised version of the relevant regulation – please ensure that you refer to the relevant [1]regulations, which are linked throughout the document.

A UK registered aircraft may be maintained in accordance with one of 4 types of maintenance programme (N-REG aircraft are considered at the end of this section):

1. A Self Declared Maintenance Programme (SDMP), which may be used for [2]Part-ML aircraft. The owner remains responsible for the programme. (ML.A.302 (b)(1)). See SDMP, below.
2. [3]An Approved Maintenance Programme, which is developed and approved by the CAMO, if an owner chooses to have their aircraft managed by the CAMO. The CAMO is responsible for the maintenance programme. (ML.A.302 (b)(2)) (CAP553 A6-1 (5.3)) (CAP553 A3-7 (15.6)). See CAMO, below.
3. [4]The Light Aircraft Maintenance Schedule (LAMS), which owners may choose for some non-Part 21 aircraft[5]. The owner remains responsible for the programme. (CAP411).
4. For owners of National Permit to Fly aircraft that do not require an Approved Maintenance Programme, the owner may ask an organisation or licensed engineer to develop a programme. The owner remains responsible for the programme. (CAP553 A3-7 (15.7)).

(A 5th option exists for a Part 21 aircraft if the owner chooses the apply the manufacturer recommendations in full, with no deviations, including all SBs, etc, but the use of such a method of compliance is problematic, as the owner needs to give the maintenance organisation written instructions and unless the aircraft is managed by the CAMO/ CAO, provide references to the material. This method cannot be used if additional airworthiness instructions are required due to modifications, repairs, etc. See ML.A.302 (e)).

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Self Declared Maintenance Programme (SDMP)

What Is It?

The SDMP is a maintenance programme based on the Minimum Inspection Programme (MIP), which is issued by the UK CAA. This is the minimum requirement, and a SDMP cannot be less restrictive than the MIP. The MIP (for aircraft with a MTOM less than 2730kg) can be found here.

The SDMP puts the onus onto the aircraft owner/operator; the owner is responsible for all aspects of the maintenance programme, including reviewing and actioning service bulletins and airworthiness directives. There are several important points to note:

- The owner cannot opt out or deviate from the maintenance programme without changing the SDMP[6] and supplying the maintenance organisation with a new signed copy.
- The owner may opt out of SBs without justification, as long as they are not linked to an AD.
- The owner may not deviate from any mandatory continuing airworthiness information, such as repetitive airworthiness directives (ADs), the airworthiness limitation section ('ALS') of the instructions for continued airworthiness (ICAs), and specific maintenance requirements contained in the type certificate data sheet ('TCDS').[7]
- The owner may take the aircraft to any suitably approved maintenance organisation or suitably qualified licensed engineer ('independent certifying staff'), without informing anyone else.
- Variations to the maintenance intervals stated in the SDMP (ie 'extensions') are permitted within the limits stated in the regulation, and the owner takes full responsibility for any variation.

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Option 1

SDMP With Ravenair Admin Support

For aircraft operating under an SDMP, Ravenair can assist with certain record keeping elements, which is covered by charging an administration fee. This fee is variable depending on the aircraft type, the amount of work required, and other factors.

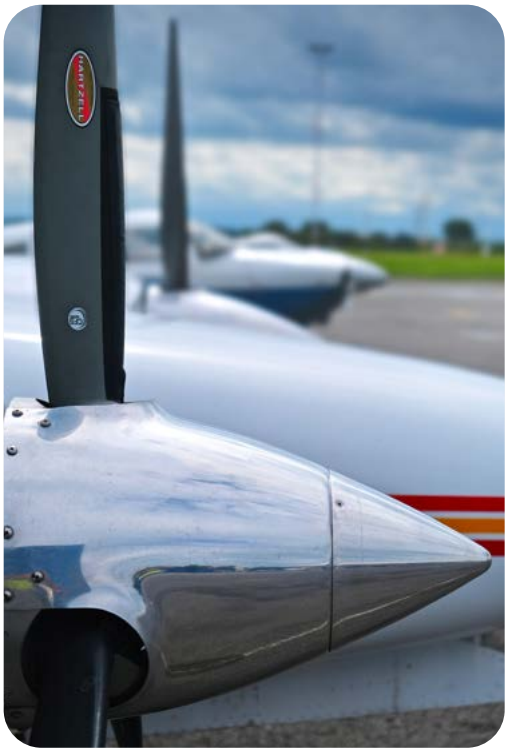
By paying this fee, Ravenair will, as agreed with the owner, keep continuing airworthiness records up to date (e.g. logbooks), and assist with creation/ alteration of the maintenance programme. Ravenair will also advise of any SBs/SLs that we believe should be embodied, including any that the owner has previously declined.

From a regulatory perspective, this service is not 'management' of the aircraft, as per Option 2 opposite, and the owner remains fully responsible for and must accept or refuse proposed changes to the SDMP[8], and remains responsible for the accuracy and timeliness of the record keeping.

Option 2

SDMP Without Ravenair Admin Support

For owners who wish to operate under SDMP but do not wish to pay for Ravenair administrative support, the owner must complete all logbooks and records, in addition to updating the maintenance programme as required by the regulation[9]. For owner supplied parts, the owner must provide Ravenair with the correct paperwork (e.g. CAA Form 1, or other acceptable release). There will also be a fee applied to any owner supplied parts to cover receipt, inspection, batching and handling.



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Option 3

Continuing Airworthiness Maintenance Organisation (CAMO)

By allowing a CAMO to manage the aircraft instead of managing the aircraft as the owner (with or without admin support, Options 1 and 2, above), the owner puts Ravenair in charge of the maintenance programme and the airworthiness of the aircraft.
This means that:

- Ravenair will approve the maintenance programme, keep all records and logbooks up to date, as well as instructing the aircraft owner regarding required maintenance based on the maintenance programme.
- Any deviations from the manufacturer recommended maintenance provisions, including SB/SL, must be justified via a risk-based approach, so the maintenance programme cannot be based on the MIP.
- Owners are not required to use Ravenair for maintenance. Ravenair must be informed of any maintenance/work that takes place on the aircraft away from Ravenair. The owner is required to provide Ravenair with the records of that maintenance, and Ravenair must be consulted prior to any repair or modification work taking place away from Ravenair to ensure that the proposed work meets the regulatory standard.
- Variations to the maintenance intervals included in the maintenance programme (ie 'extensions') are permitted within the boundaries stated within the maintenance programme. Only the CAMO has the authority to approve these variations.
- There is a monthly fee associated with the management of an aircraft.

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Use of a CAMO is more restrictive; however, it can provide the owner with more peace of mind that all items have been complied with. Unless a CAMO is specifically required, we suggest using an SDMP with Ravenair admin support. This provides the owner with sufficient confidence that all items have been complied with but also allows for more owner control and a less restrictive solution.

For any defects grounding a RVR CAMO managed aircraft away from Liverpool (base), or when the pilot is unsure of the nature of a defect, the pilot must contact Ravenair Engineering to determine the appropriate course of action. When it is determined by Ravenair that a defect must be rectified before further flight, it may be appropriate to allow a locally based approved organisation or licensed engineer to conduct the rectification. If this is the case, then the Ravenair CAMO will issue a purchase order (PO) to the approved organisation or licensed engineer. When a suitably approved organisation carries out the rectification, it will do so under its own approval and release the aircraft using its own certification and procedures.

If no suitably approved organisation is available at the location, Ravenair Part 145 may issue a 'single event authorisation' (SEA) to a suitably qualified, licensed engineer. In the latter case, the aircraft will be released using the Ravenair Part 145 approval and an authorisation number issued to the releasing engineer. It is essential that the approval and authority details included in the SEA are copied to the release paperwork, such as the Technical Log and any additional paperwork, such as a Work Pack. The Ravenair approval number UK.145.00812 and a unique authority number will be stated in the SEA.

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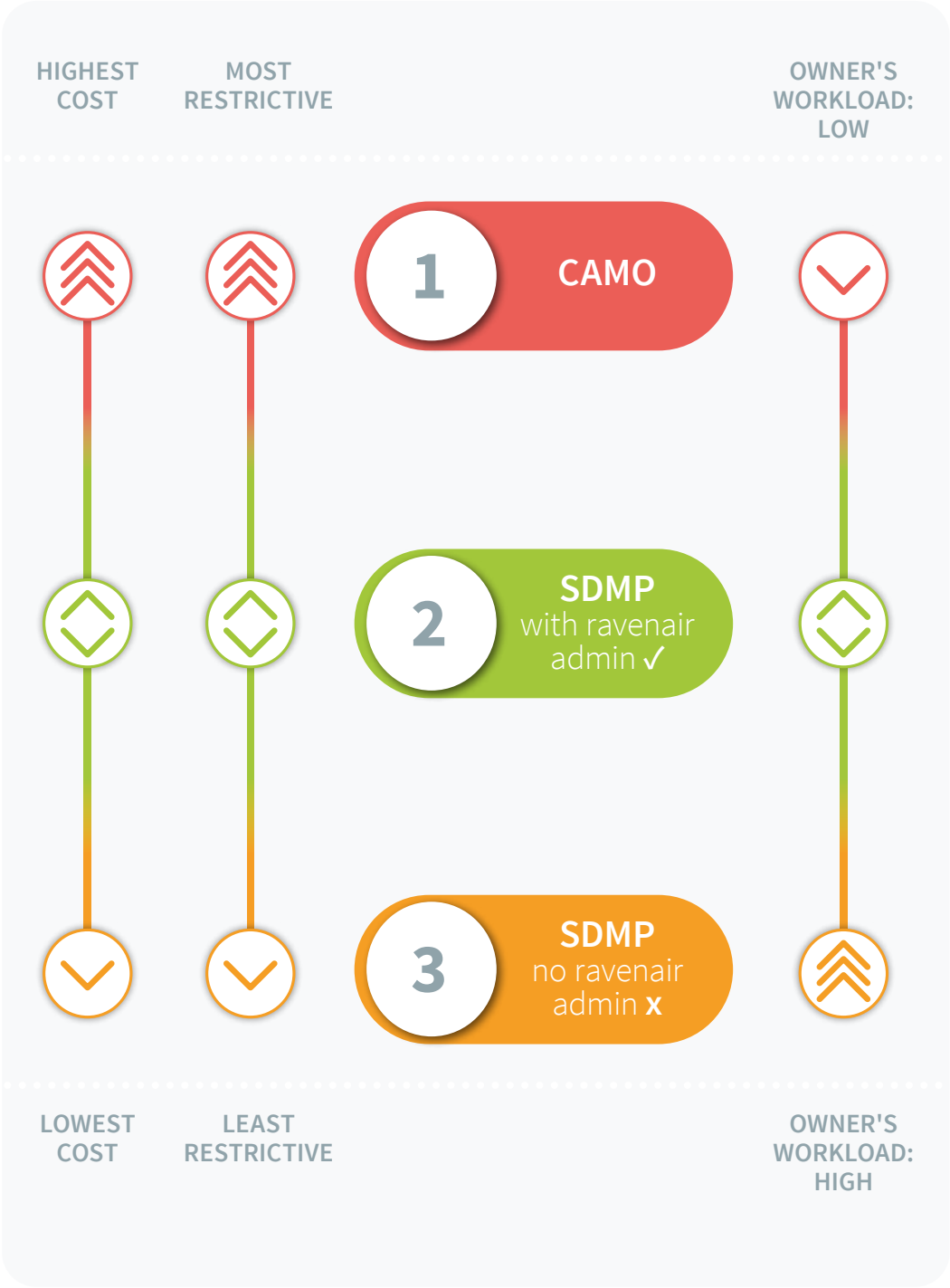
CAMO vs SDMP options



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National Permit to Fly

A national permit to fly may be issued to aircraft that do not meet the International Civil Aviation Organisation (ICAO) certification standards required for the issue of a Certificate of Airworthiness (C of A) subject to satisfying certain requirements. Rules governing this type of aircraft are at the links below. Aircraft owners may enter into a management agreement with an A8-25 approved organisation (Ravenair) or manage the aircraft themselves. The maintenance programme may be required to be approved by the CAA in some cases.

- Permits to fly | Civil Aviation Authority
- CAP 553 Section A3-7
- CAP 733 Permit to Fly Aircraft
- CAP 1740 Maintenance Programmes (National Permit to Fly)

There are recurring regulatory costs associated with maintaining permit aircraft, such as applying to the CAA for Permit Release Authorisation for Ravenair staff to release the aircraft post-maintenance.

N-REG Maintenance

N-REG aircraft fall under different requirements from UK registered aircraft. As a minimum, the owner must comply with the relevant aspects of CFR Title 14 Chapter I.

In particular, those listed below.

Subchapter F, Part 91.

eCFR :: 14 CFR 91.409 -- Inspections. (FAR 91.409)

91.409 (a)(1) Except as provided in paragraph (c) of this section, no person may operate an aircraft unless, within the preceding 12 calendar months, it has had—

(1) An annual inspection in accordance with part 43 of this chapter and has been approved for return to service by a person authorized by § 43.7 of this chapter.

Subchapter C, Part 43.

eCFR :: 14 CFR Part 43 -- Maintenance, Preventive Maintenance, Rebuilding, and Alteration (FAR Part 43)

43.15 (c)(1) Each person performing an annual or 100-hour inspection shall use a checklist while performing the inspection. The checklist may be of the person's own design, one provided by the manufacturer of the equipment being inspected or one obtained from another source. This checklist must include the scope and detail of the items contained in appendix D to this part and paragraph (b) of this section.

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SECTION 02

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SECTION
02

Ravenair Engineering Procedures

Requesting Work

To request any work to be carried out, we ask that you complete this form. This notifies our team of your request, who will ask you for any additional information required and help book the work in.

The link to the form is also available on the Downloads page of our website. Downloads ravenair.co.uk, Maintenance and Management.

Actions After Flight

To help manage our workload and forward planning of work, we kindly ask that our "3rd Party Aircraft Form" is completed after each flight. This allows you to:

- Provide us with the hours remaining until the next check
- Report any faults

When the form is completed, our internal admin system will automatically update based on the information entered. By providing us with the hours remaining until the next check, we can more accurately predict when your aircraft will be due a maintenance check, which allows us to ensure that your aircraft is offline for the minimum amount of time possible.

We understand that you can be in a rush after a flight and may forget to complete the form. Do not worry – just complete it after the next flight! To help you remember to complete the form, we recommend adding a column to your tech log, which confirms that the form has been completed. If you would like us to supply you with a pre-made tech log design to be used, please let us know.

To ensure the form is easily accessible, we will provide you with a laminated QR code that points to the above form to keep in your tech log.

Please note that the form asks for a "PIN". This PIN code is unique to each aircraft and ensures that a user cannot log faults for another aircraft accidentally. Users must ensure that their PIN is not shared. If you require a PIN to be changed, please contact us via email at engineering@ravenair.co.uk.

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Reporting Faults

We often find that faults are reported incorrectly – they are either not recorded by pilots at all, or pilots record them but defer them incorrectly. Our digital system will automatically inform our team of any fault entered, so that if this is entered incorrectly, we can quickly rectify this to keep you flying for longer (N-Reg aircraft are considered at the end of this section).

Defect / Noteworthy
3rd Party Aircraft

Types of Faults

For most aircraft, the aircraft you operate is managed and maintained under Part-ML, and the pilot may choose to defer inoperative non-required items for a time period of their choosing. This does not mean that faults can be deferred indefinitely; a date must be selected. Our system will guide you through this process. We use the following terminology:

- Defect[10] = A defect, such as damage or an item that is not functioning correctly, that seriously endangers the flight safety shall be rectified before further flight/ flight cannot be commenced with the fault.
- Deferrable Defect = An item that is not functioning correctly, but does not seriously endanger flight, and which is not a required item11 under UK Part-NCO, NCO.IDE.A.120 (for VFR), and UK Part-NCO, NCO.IDE.A.125 (for IFR).
  These must be deferred to a specific date, which is selected by the pilot.
  (It is also worth noting that an owner may create and use a MEL to defer defects. The MEL must be no less restrictive than the MMEL, and is only required to be notified to the CAA and does not require approval. See UK Part-NCO.GEN.155).
  Any fault fitting into this category shall be rectified as soon as practicable from the date on which the defect was first identified and within the limits specified in the maintenance data.
- Noteworthy[12] = An item that is still functioning but may need some form of future maintenance action to return it to a “new” or “perfect” condition.

Further information can be found in UK Part-ML, ML.A.403.

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We understand that the difference between these categories, especially deferred defects and noteworthy items, can be difficult to understand. We have included some generic examples below to try to assist.

The regulation advises that pilots should consult with certifying staff, where possible, prior to deferring any defects. When deferring a defect, the pilot takes full responsibility for the deferral. Pilots are not obliged to defer defects just because it may be possible to do so and are at liberty to log a defect. Pilots are not obliged to accept deferred defects entered by others.

Pilots must evaluate fully the consequences of deferring a defect, and particularly the potential cumulative effects of multiple deferred defects.

The linked generic sample Kinds of Equipment list from CS-23 may assist with decision making, but is for guidance only and does not override the AFM, Part-NCO, any applicable airworthiness directives or other mandatory requirement.

Example 1

Fault: *The attitude indicator is sluggish, and slow to respond.*

Correct category: **deferred defect**.
The item is not required under UK Part-NCO, NCO.IDE.A.120 (assuming no night or IMC), so it may be deferred for a period of the pilot's choosing.

Example 2

Fault: *The attitude indicator is working correctly but has a small amount of condensation in the glass casing.*

Correct category: **noteworthy**.
The item is still functioning correctly; however, the condensation would ideally be rectified. This does not need to be deferred.

Example 3

Fault: *The left navigation light has failed.*

Correct category: **deferred defect**.
Although the other navigation lights are working, this light has failed. As the item is not required under UK Part-NCO, NCO. IDE.A.120 (assuming no night or IMC), it can be deferred for a period of the pilot's choosing.

Example 4

Fault: *The magnetic compass has leaked fluid.*

Correct category: **defect**.
As the magnetic compass is required for flight by UK Part-NCO, NCO.IDE.A.120, this must be entered as a defect and the aircraft may not be flown.

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Reporting Defects

To report a fault, you must:

1 Enter the fault into your aircraft technical log if it is a "Defect" or a "Deferred Defect". "Noteworthy" items should not be entered.

   a. Your tech log must show the date that a Deferred Defect is deferred until. We would recommend using our tech log design to help you remain compliant. This can be provided upon request.

2 Complete our "3rd Party Aircraft Form". This will automatically notify us of the issue and add it to our administration system.

If we believe that you have selected the wrong category, we will contact you to discuss this.

If you are unsure if another pilot in the group has entered a noteworthy item, then do not worry! Our system will deal with duplicate entries, so if unsure, please report the fault.

Completing the form does not absolve you from completing the technical log for defects and deferred defects. The technical log is the legal document!

N-REG Defects

For N-REG aircraft, there are similar rules that are described at Title 14, Chapter I, Subchapter F, Part 91, Subpart C, 91.213. eCFR :: 14 CFR 91.213 -- Inoperative instruments and equipment. (FAR 91.213)

In particular, defects may be deferred in accordance with a MEL, although the MEL must be authorised, unlike its UK Part NCO version. However, 91.213 (d) allows the pilot to defer a range of instruments and equipment in a similar fashion to ML.A.403 as detailed in the endnote[13]. Effectively, there are similar to the 'non-required' instruments and equipment described by ML.A.403, but including more detail on how to determine these.

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SECTION 03

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Endnotes

1 If links in the document break or are superseded, information can be found by searching for 'UK CAA Regulation' and selecting 'Basic Regulation' and then 'Continuing Airworthiness', for ML aircraft, and for non-Part 21 aircraft, 'UK CAA CAP 553'.

2 Part-ML. Aircraft included in the definition of Part ML, as far as it affects us is other than complex aeroplanes up to 2730kg MTOM not listed in the air operator certificate of a licensed air carrier.

3 Owners of managed Part-ML aircraft, managed non-Part 21 aircraft and managed National Permit to Fly aircraft may ask a suitably approved CAMO to develop and approve a maintenance programme. Some national permit to fly aircraft require an approved maintenance programme, which if the aircraft is not managed by a CAMO, or the CAMO is not approved to approve the maintenance programme, must be approved by the CAA.

4 LAMS for non-Part 21 aircraft should not be confused with LAMP for Part 21 aircraft. LAMP has effectively been replaced by the MIP. LAMP is no longer approved and may not be used.

5 The Basic Regulation (2018/1139) Article 2(3)(d) exempts certain design, production, maintenance and operational activity, including all related personnel, from its rules. Annex I of the Basic Regulation outlines the aircraft to which this exemption applies. Such aircraft are termed non-Part 21 aircraft by the UK and non-EASA aircraft by EASA member states. (These aircraft were previously outlined in Annex II of the Basic Regulation, so the term Annex II is may still be seen in older publications). UK Basic Regulation.

6 The SDMP must continue to comply with the MIP and mandatory continuing airworthiness information following any changes.

7 The owner must also ensure completion of 'one-off' ADs, but these do not appear in the SDMP as they are not repetitive. The ALS are found in the maintenance manual (AMM), and depending on the age and construction of the AMM, found in 'Section 4' for newer aircraft that use a standardised format, but for older aircraft, could be found anywhere.

8 Some changes to the SDMP are mandatory. See 'Regulatory updates of the SDMP'.

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9 Regulatory updates of the SDMP are those that are mandatory and will occur, for instance if a repetitive AD is issued, the MIP is amended by the regulator, or deficiencies are identified in the SDMP that must be addressed. ML.A.302 (c)(9) requires a review of the maintenance programme either by the airworthiness review staff during the airworthiness review for the ARC or by the CAMO. 'If the review shows deficiencies of the aircraft linked with deficiencies in the content of the AMP, the AMP shall be amended accordingly. In this case the person performing the review shall inform the CAA if he does not agree with the measures amending the AMP taken by the owner, CAMO or CAO. The CAA shall decide which amendments to the AMP are necessary, raising the corresponding findings and, if necessary, reacting in accordance with point ML.B.304.'

10 AMC1 ML.A.403 states, regarding defects, 'Aircraft equipment should be declared to be defective if the pilot observed a malfunction during the flight, or if considered as faulty after inspection/test referred to in the maintenance data'.

11 GM1 ML.A.403 defines a 'required' item as, 'The term 'required' refers to equipment that is required by the applicable airworthiness code (certification specification) or required by the relevant regulations for air operations or the applicable rules of the air or as required by air traffic management (e.g. a transponder in certain controlled airspace)'.

12 AMC1 ML.A.403 states that the rules regarding defects do, '…not prevent the pilot from recording observations and comments on the performance of the aircraft equipment where this is not considered to constitute a defect'.

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13 Except for operations conducted in accordance with paragraph (a) or (c) of this section, a person may take-off an aircraft in operations conducted under this part with inoperative instruments and equipment without an approved Minimum Equipment List provided—

(1) The flight operation is conducted in a—

(i) Rotorcraft, non-turbine-powered airplane, glider, lighter-than-air aircraft, powered parachute, or weight-shift-control aircraft, for which a master minimum equipment list has not been developed; or

(ii) Small rotorcraft, non-turbine-powered small airplane, glider, or lighter-than-air aircraft for which a Master Minimum Equipment List has been developed; and

(2) The inoperative instruments and equipment are not—

(i) Part of the VFR-day type certification instruments and equipment prescribed in the applicable airworthiness regulations under which the aircraft was type certificated;

(ii) Indicated as required on the aircraft's equipment list, or on the Kinds of Operations Equipment List for the kind of flight operation being conducted;

(iii) Required by § 91.205 or any other rule of this part for the specific kind of flight operation being conducted; or

(iv) Required to be operational by an airworthiness directive; and

(3) The inoperative instruments and equipment are—

(i) Removed from the aircraft, the cockpit control placarded, and the maintenance recorded in accordance with § 43.9 of this chapter; or

(ii) Deactivated and placarded "Inoperative." If deactivation of the inoperative instrument or equipment involves maintenance, it must be accomplished and recorded in accordance with part 43 of this chapter; and

(4) A determination is made by a pilot, who is certificated and appropriately rated under part 61 of this chapter, or by a person, who is certificated and appropriately rated to perform maintenance on the aircraft, that the inoperative instrument or equipment does not constitute a hazard to the aircraft.
An aircraft with inoperative instruments or equipment as provided in paragraph (d) of this section is considered to be in a properly altered condition acceptable to the Administrator.