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## Introduction

In exercise of the powers conferred by section 24O of the Civil Aviation Act 2019 (Act 3), the Chief Executive Officer makes this Civil Aviation Directive (CAD) 8302 – Airworthiness Flight Test and Other Related Flight Tests pursuant to Regulations 26, 29, 160, 189 and 193 of the Malaysia Civil Aviation Regulations (MCAR) 2016.

This Directive provides the requirements and procedures for the airworthiness flight test and other flight tests of an aircraft registered in Malaysia.

This Directive is published by the Chief Executive Officer under section 24O of the Civil Aviation Act 1969 (Act 3) and come into operation on 1<sup>st</sup> February 2022.

### Non-compliance with this CAD

Any person who contravenes any provision in this CAD commits an offence and shall on conviction be liable to the punishments under Section 24O (2) of the Civil Aviation Act 1969 [Act 3] and/or under Malaysia Civil Aviation Regulation 2016.

**(Captain Chester Voo Chee Soon)**  
Chief Executive Officer  
Civil Aviation Authority of Malaysia

## Civil Aviation Directive components and Editorial practices

This Civil Aviation Directive is made up of the following components and are defined as follows:

**Standards:** Usually preceded by words such as “*shall*” or “*must*”, are any specification for physical characteristics, configuration, performance, personnel or procedure, where uniform application is necessary for the safety or regularity of air navigation and to which Operators must conform. In the event of impossibility of compliance, notification to the CAAM is compulsory.

**Recommended Practices:** Usually preceded by the words such as “*should*” or “*may*”, are any specification for physical characteristics, configuration, performance, personnel or procedure, where the uniform application is desirable in the interest of safety, regularity or efficiency of air navigation, and to which Operators will endeavour to conform.

**Appendices:** Material grouped separately for convenience but forms part of the Standards and Recommended Practices stipulated by the CAAM.

**Definitions:** Terms used in the Standards and Recommended Practices which are not self-explanatory in that they do not have accepted dictionary meanings. A definition does not have an independent status but is an essential part of each Standard and Recommended Practice in which the term is used, since a change in the meaning of the term would affect the specification.

**Tables and Figures:** These add to or illustrate a Standard or Recommended Practice and which are referred to therein, form part of the associated Standard or Recommended Practice and have the same status.

**Notes:** Included in the text, where appropriate, Notes give factual information or references bearing on the Standards or Recommended Practices in question but not constituting part of the Standards or Recommended Practices;

**Attachments:** Material supplementary to the Standards and Recommended Practices or included as a guide to their application.

It is to be noted that some Standards in this Civil Aviation Directive incorporates, by reference, other specifications having the status of Recommended Practices. In such cases, the text of the Recommended Practice becomes part of the Standard.

The units of measurement used in this document are in accordance with the International System of Units (SI) as specified in CAD 5. Where CAD 5 permits the use of non-SI alternative units, these are shown in parentheses following the basic units. Where two sets of units are quoted it must not be assumed that the pairs of values are equal and interchangeable. It may, however, be inferred that an equivalent level of safety is achieved when either set of units is used exclusively.

Any reference to a portion of this document, which is identified by a number and/or title, includes all subdivisions of that portion.

Throughout this Civil Aviation Directive, the use of the male gender should be understood to include male and female persons.





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## 1 General

### 1.1 Citation

- 1.1.1 This Civil Aviation Directive (CAD) should be cited as the Civil Aviation Directive 8302 – Airworthiness Flight Tests and Other Related Flight Tests.
- 1.1.2 This CAD 8302 – Airworthiness Flight Tests and Other Related Flight Tests, Issue 01/Revision 00 will remain current until withdrawn or superseded.
- 1.1.3 This Directive contains the additional standards, requirements and procedures and shall be read together with CAD 8 – Airworthiness of Aircraft.

### 1.2 Applicability

- 1.2.1 The following persons shall be subject to this Directive—
- a) holder of a Permit to Fly issued under MCAR;
  - b) the owner of an aircraft;
  - c) the lessee of an aircraft;
  - d) pilots approved in accordance with paragraph 2.4 below;
  - e) an approved maintenance organisation issued by the CAAM; and
  - f) an organisation that is approved to manage continuing airworthiness.
- 1.2.2 CAAM may require airworthiness flight tests or other related flight tests to be performed in support of initial or continuing airworthiness assurance.

### 1.3 Revocation

- 1.3.1 CAD 8301 – Certificate of Airworthiness with this CAD, revokes Airworthiness Notice No. 45 - Airworthiness Flight Test, Issue 4 dated 15 May 2005.

### 1.4 Definitions

- 1.4.1 In this Directive, unless the context otherwise requires—

***Airworthiness Flight Test Schedule*** means a planned flight testing form that details numerous ground and flight tests to be accomplished.

***Airworthiness Flight Test Report*** means a report which details the ground and flight test results and is a prerequisite for consideration for Malaysian certificate of airworthiness.

## 2 Airworthiness Flight Test Schedule (AFTS)

### 2.1 Development of AFTS

2.1.1 The AFTS shall be prepared by the Continuing Airworthiness Management Organisation (CAMO) and submitted together with a completed Statement of Compliance (SOC) (CAAM/AW/8101-01) and supporting Flight Test related documents, for example, manufacturer's flight test schedule to enable CAAM to review and approve the AFTS.

*Note. – Any AFTS that are generic in nature i.e. not applicable to specific aircraft types, for example, CAA UK's AFTS applicable for single, piston-engine aeroplanes up to 2730 kg (6000 lb) MTOM and other equivalent AFTS, can be used by CAMO 'as-is' and does not require CAAM Airworthiness Division's approval.*

2.1.2 Upon satisfactory review of the CAMO's submitted AFTS, CAAM may approve the AFTS by endorsing both the Statement of Compliance (SOC) and the cover page of the CAMO's AFTS.

2.1.3 When an imported used aircraft is acceptable to CAAM and issued with a Malaysian Certificate of Registration, the subject used aircraft may be flight tested using CAAM approved AFTS and under the conditions of a Malaysian issued Permit to Fly (PtF).

2.1.4 Alternatively, a used aircraft may be flight tested under an exporting foreign registration provided the following are fulfilled—

- a) agreement between the existing foreign owner and the new Malaysian owner on the terms of responsibilities for the Airworthiness Flight Test, which includes the involvement of CAAM approved CAMO;
- b) conduct of Airworthiness Flight Test per CAAM approved AFTS;
- c) the subject aircraft's documents like certificate of airworthiness, certificate of registration, aircraft flight manual, aircraft radio licence, third party liability insurance certificate, mass & balance document and passenger and/or cargo manifests (if applicable) are valid;
- d) the subject aircraft is declared as airworthy prior to the Airworthiness Flight Test;
- e) the pilot-in-command for the Airworthiness Flight Test has valid pilot's flying licence with appropriate type rating(s);
- f) the Malaysian owner's flight crew or equivalent shall be the observer for the Airworthiness Flight Test and is responsible for the acceptance of the used aircraft into Malaysia's aircraft register;

- g) the existing foreign owner shall ensure that any defects encountered during the Airworthiness Flight Test are recorded and rectified accordingly and verified by the CAMO engaged by the Malaysian owner;
- h) the CAMO engaged by the Malaysian owner is responsible for the preparation of the used aircraft's Airworthiness Flight Test Report and its submission for CAAM's acceptance; and
- i) the CAMO engaged by the Malaysian owner shall provide the above-mentioned proposal for CAAM's acceptance.

## **2.2 Amendment to AFTS**

- 2.2.1 Amendments to the AFTS shall be submitted together with a new SOC as well as supporting Flight Test related documents for CAAM's review and approval. Copies of previously approved AFTS and its associated SOC shall be submitted too.
- 2.2.2 Upon satisfactory review of the CAMO's amended AFTS, CAAM may approve the AFTS by endorsing both the SOC and cover page of the CAMO's AFTS.

## **2.3 Contents of the AFTS**

- 2.3.1 The CAMO's AFTS shall contain the following—
  - a) AFTS reference number, issue number and date;
  - b) Policies/ Procedures in respect of Minimum Flight Test Crew including Carriage of Passengers during Test Flight, Aircraft Flight Manual limitations and Approved Pilots for Flight Test;  
*Note. – Aircraft Flight Manual limitations shall not be exceeded during the test flight or the Permit to Fly may be invalidated.*
  - c) Flight Test Certificate or equivalent;
  - d) Flights conducted with valid Permit to Fly (PtF) or equivalent;
  - e) Mandatory placards/ markings checking;
  - f) Defects encountered during the test flight and their rectifications;
  - g) Individual tests, for example, one engine inoperative climb test, low speed handling test, autorotation test, power assurance test, stall test, dive to never-exceed speed test, aircraft's system(s) test(s), etc; and
  - h) Load sheet. Airworthiness Flight Test

## **2.4 Approval of Pilots to Carry Out Airworthiness Flight Test**

- 2.4.1 CAMO shall nominate pilots who are properly qualified with adequate flying experience to carry out Airworthiness Flight Test. The pilot's flying experience requirements shall be as per paragraph 3.1.2. The CAAM may approve the nominated pilots.

- 2.4.2 The minimum experience required to carry flight test are as follows—
- a) AEROPLANE  $\leq$  5,700 kg.
    - 1) A minimum of 400 hours total flying time for single-engine aircraft, or 800 hours total flying time, including a minimum of 100 hours on light twin engine aircraft as pilot in command, for twin-engine aircraft; and
    - 2) Recent experience on the particular aircraft type or similar aircraft types, amounting to at least 10 hours in the last 12 months for single-engine aircraft and 20 hours in the last 12 months for twin-engine aircraft; and
    - 3) Familiarity with, and in current spinning practice for, testing of aircraft certified for spinning.
  - b) HELICOPTER
    - 1) A minimum of 400 hours total flying time for single-engine helicopters, or 800 hours total flying time for twin-engine helicopters; and
    - 2) Recent experience on the particular helicopter type or, for single engine helicopters below 2,730 kg, similar helicopter types, amounting to at least 20 hours in the last 12 months.
  - c) AEROPLANE  $>$  5,700 kg.
    - 1) Recent experience on the particular aircraft type, amounting to at least 50 hours in the last 12 months, and are designated as CAAM Authorised Examiners.

*Note. – When a pilot does not meet the above requirements, the CAAM may accept if they are appropriately type rated professional test pilots or appropriately type rated flying instructors. CAAM may also accept applications from sole owners of aircraft up to 2730 kg MTOW provided he/she is type rated on the subject aircraft.*
- 2.4.3 CAMO shall complete CAAM's application form Pilot's application to conduct Airworthiness Flight Test (CAAM/AW/8302-04) and submit to CAAM Airworthiness Division.
- 2.4.4 Prior to initial approval, Pilots intending to carry out Airworthiness Flight Test shall be briefed by CAAM on the safety precautions and flight test techniques.
- 2.4.5 After the briefing, CAAM may fly together with the pilot to complement the briefing.
- 2.4.6 When above Paragraphs 3.1.1 to 3.1.5 are satisfactorily completed, CAAM shall approve the pilot concerned.
- 2.5 Insurance Cover for Airworthiness Flight Tests**
- 2.5.1 When the Airworthiness Flight Test involves any CAAM personnel, the CAMO shall ensure that each CAAM personnel is provided insurance coverage against

all air risks. This insurance coverage for CAAM personnel shall be at par with the Aircraft Operator's Flight Crew insurance coverage.

## **2.6 Post Flight Procedures and Aircraft Performance Analysis**

- 2.6.1 Upon completion of the Airworthiness Flight Test, the pilot shall record in the Flight Test Certificate, as well as, in the Journey Log any defects arising from the Flight Test. If a re-flight test is required, the pilot shall ensure all tests are completed.
- 2.6.2 The pilot shall ensure that all flight test results are available and properly recorded.
- 2.6.3 The pilot shall ensure that the aircraft's performance analysis is completed and compared with the Aircraft Flight Manual's performance data. If the aircraft's performance is found to be worse when compared with the Aircraft Flight Manual, the pilot shall record in the Flight Test Certificate, as well as, in the Journey Log for CAMO's corrective action.
- 2.6.4 If a qualified Airworthiness Engineer or Aircraft Maintenance Engineer is part of the Aircraft Operator's Airworthiness Flight Test Team, this Engineer shall ensure that the flight test results including aircraft's performance analysis are complete and properly recorded.

## **2.7 Post Flight Reporting**

- 2.7.1 The CAMO shall ensure the Airworthiness Flight Test Report is completed satisfactorily prior to submission to CAAM Airworthiness Division. Any incomplete or unsatisfactory Airworthiness Flight Test Report submitted may be rejected and the aircraft may be subjected to another flight test.
- 2.7.2 The CAMO shall submit the following together with the Airworthiness Flight Test Report—
- a) Load Sheet;
  - b) Achieved/ Actual Performance Climb Graph;
  - c) Scheduled Performance Climb calculations including Flight Manual's climb graph/ chart;
  - d) Scheduled Stall calculations including Flight Manual's stall graph/ chart;
  - e) Power Assurance Checks calculations including Flight Manual's power assurance graph/ chart (for helicopters);
  - f) Autorotation Checks calculations including autorotation graph/ chart (for helicopters); and
  - g) Aircraft defects encountered during Airworthiness Flight Test and their rectifications.

### **3 Other Related Flight Tests**

#### **3.1 Flight Test Due to Manufacturer’s Maintenance Requirements**

3.1.1 If maintenance check flight is required by the aircraft maintenance manual or any other maintenance data issued by the design approval holder being responsible for continuing airworthiness of the aircraft, CAMO may accurately transcribe the applicable maintenance data to develop its own Maintenance Check Flight Schedule (MCFS) in accordance with procedures in CAAM-approved CAME. The MCFS is not required to be approved by CAAM unless there is deviation from the aforementioned maintenance data.

3.1.2 The Flight Test Schedule (FTS) shall be prepared by the CAMO and submitted together with a completed SOC and supporting Flight Test related documents to CAAM.

3.1.3 Upon satisfactory review of the CAMO’s submitted FTS, CAAM may approve the FTS by endorsing the SOC and the cover page of the CAMO’s FTS.

3.1.4 The CAMO’s FTS shall contain the following—

- a) FTS reference number, issue number and date;
- b) Policies/ Procedures in respect of Minimum Flight Test Crew including Carriage of Passengers during Test Flight, Aircraft Flight Manual limitations and appropriate type rated Pilots to conduct the Flight Test;

*Note. – Aircraft Flight Manual limitations shall not be exceeded during the Test Flight or the Permit to Fly may be invalidated.*

- c) Flight Test Certificate or equivalent;
- d) Flights conducted with valid Permit to Fly (PtF);
- e) Defects encountered during the test flight and their rectifications; and
- f) Load sheet.

#### **3.2 Post Flight Procedures**

##### **3.2.1 Upon completion of the Flight Test**

The pilot shall record in the Flight Test Certificate, as well as, in the Journey Log any defects arising from the flight test. If a re-flight test is required, the pilot shall ensure all affected areas are completed.

##### **3.2.2 After the Flight Test**

The pilot shall ensure that all test results are available and properly recorded

##### **3.2.3 Records**

After the Flight Test, the CAMO shall ensure that the Airworthiness Flight Test Report including associated maintenance actions are documented and kept as part of aircraft maintenance records.

### **3.3 Flight Test Due to Modification(s) or Repair(s)**

3.3.1 When an aircraft modification or repair requires Flight Test via compliance to type certification or supplement type certification requirements, these Flight Test(s) shall be carried out in accordance with manufacturer's requirements as well as the following requirements—

- a) nomination of Test Pilot (modification/ repair) according to paragraph 3.1; and
- b) submission of Flight Test Plan including supporting documents for CAAM's approval/acceptance.

## **4 CAMO's AFT Policies and Procedures Interface with CAAM**

### **4.1 Policies and procedures**

4.1.1 CAME shall contain policies and procedures on Aircraft Flight Test with respect to compliance to this directive.

### **4.2 CAAM participation**

4.2.1 CAAM may participate in CAMO's airworthiness flight test as and when required.

### **4.3 Downgrading**

4.3.1 If a CAMO's aircraft shows signs of degrading performance i.e. aircraft performance is not able meet the Aircraft Flight Manual's performance data, the aircraft may be subject to performance downgrade by CAAM.



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