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**Maldivian Civil Aviation Regulations**

## **MCAR-21 Initial Airworthiness**

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**Maldives Civil Aviation Authority  
Republic of Maldives**

**Maldivian Civil Aviation Regulations**

# **MCAR-21 Initial Airworthiness**

**Issue 3.00, 18 December 2019**

## **Foreword**

Maldives Civil Aviation Authority, in exercise of the powers conferred on it under Articles 5 and 6 of the Maldives Civil Aviation Authority Act 2/2012 has adopted this Regulation.

This Regulation shall be cited as MCAR-21 Initial Airworthiness and shall come in to force on 18 December 2019.

Existing aviation requirements in the field of airworthiness as listed in MCAR-21 Initial Airworthiness dated 31 December 2013 will be repealed as from 18 December 2019.

'Acceptable Means of Compliance' (AMC) illustrate a means, or several alternative means, but not necessarily the only possible means by which a requirement can be met.

'Guidance Material' (GM) helps to illustrate the meaning of a requirement.



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## **Section A – TECHNICAL REQUIREMENTS**

## **Subpart A — GENERAL PROVISIONS**

### **MCAR-21.A.1 Scope**

This Section establishes general provisions governing the rights and obligations of the applicant for, and holder of, any certificate issued or to be issued in accordance with this Section.

### **MCAR-21.A.3B Airworthiness directives**

- (a) An airworthiness directive means a document issued or adopted by the State of Design/CAA which mandates actions to be performed on an aircraft to restore an acceptable level of safety, when evidence shows that the safety level of this aircraft may otherwise be compromised.
- (b) The CAA shall issue an airworthiness directive when:
1. an unsafe condition has been determined by the CAA to exist in an aircraft, as a result of a deficiency in the aircraft, or an engine, propeller, part or appliance installed on this aircraft; and
  2. that condition is likely to exist or develop in other aircraft.
- (c) When an airworthiness directive has to be issued by the CAA to correct the unsafe condition referred to in paragraph (b), or to require the performance of an inspection, the holder of the type-certificate, supplemental type-certificate, major repair design approval, Technical Standard Order (TSO) authorisation or any other relevant approval deemed to have been issued under this Regulation, shall:
1. Propose the appropriate corrective action or required inspections, or both, and submit details of these proposals to the CAA for approval.
  2. Following the approval by the CAA of the proposals referred to under subparagraph (1), make available to all known operators or owners of the product, part or appliance and, on request, to any person required to comply with the airworthiness directive, appropriate descriptive data and accomplishment instructions.
- (d) An airworthiness directive shall contain at least the following information:
1. An identification of the unsafe condition;
  2. An identification of the affected aircraft;
  3. The action(s) required;
  4. The compliance time for the required action(s);

5. The date of entry into force.

## **Subpart B — TYPE-CERTIFICATES**

### **MCAR-21.A.11      Scope**

- (a) CAA does not issue type certificates.
- (b) This Subpart establishes the procedure for issuing type acceptance certificates (TAC) for products with foreign type certificates.

### **GM 21.A.11      Scope**

The TAC has no holder as such. The TAC is issued to recognise a foreign type-certificate in the Maldives. Once issued, any subsequent aircraft of that type may enter Maldives without going through the type acceptance process.

All aircraft must go through the entry process for the issue of an airworthiness certificate.

Acceptance of the aircraft's type-certificate (TC) will imply acceptance of the associated engine and/or propeller type-certificate.



### **MCAR-21.A.12 Acceptability of foreign type certificates**

The following foreign type-certificates may be accepted by the CAA for issuing a TAC:

- (a) a type-certificate issued by the EASA
- (b) a type-certificate accepted by EASA
- (c) a type-certificate issued by a national aviation authority of an ICAO Contracting State in compliance with Annexes 8 and 16 to the Convention on International Civil Aviation.

### **MCAR-21.A.15 Application**

- (a) An application for a TAC shall be made in a form and manner established by the CAA.
- (b) An applicant for TAC shall provide CAA:
  - 1. evidence that a type certificate acceptable to CAA as per MCAR 21.A.12, has been issued;
  - 2. details of any airworthiness requirement not complied with is compensated for by a factor that provides an equivalent level of safety;
  - 3. a copy of the applicable type certificate data sheet;
  - 4. a copy of the type certificate data sheet for noise;
  - 5. a copy of the flight manual that contains all the available options applicable to the type, and that was approved by the national aviation authority that issued the foreign type certificate;
  - 6. a copy of the manufacturer's instructions for continued airworthiness of the aircraft;
  - 7. a copy of the parts catalogue for the aircraft;
  - 8. a list of all current field service documents applicable to the aircraft ;
  - 9. an undertaking from the holder of the foreign type certificate to continue to supply CAA at no charge, service bulletins and instructions for the continuing airworthiness of aircraft of that type and any amendments of the documents mentioned in subparagraphs 5, 6, 7 & 8;
  - 10. maintenance and flight crew type training to a CAA Inspector.
- (c) If the application relates to a variant of an aircraft type for which there is already a TAC in force, then only data peculiar to the variant needs to be supplied. The TAC will be amended to include the new variant. The applicant shall provide maintenance and flight

crew type training relevant to the changes in type acceptance certificate, to a CAA Inspector.

**AMC 21.A.15(a) Application**

1. An application should be made on CAA Form 735.
2. The application form should state exactly which models are to be included on the TAC. These models shall be included on the foreign type-certificate.
3. The data requirements specified in MCAR-21.A.15 (c) shall be met for each model included on the application form.

**MCAR-21.A.15B Grant of a TAC**

When an applicant has demonstrated to the satisfaction of the CAA that:

- (a) the product meets the applicable type-certification basis and environmental protection requirements;
- (b) the requirements of MCAR-21.A.15(b) have been met; and
- (c) no feature or characteristic of the aircraft type makes it unsafe for the intended use,

the CAA may, subject to such conditions that the CAA deems necessary, grant a TAC.

### **MCAR-21.A.16      Suspension or cancellation of a TAC**

CAA may suspend or cancel a TAC if it considers that it is necessary to do so in the interests of aviation safety. An inability on the part of the foreign TC holder to provide ongoing technical support for the aircraft type may constitute grounds for such suspension or cancellation.

### **MCAR-21.A.31      Type design**

(a) The type design consists of:

1. The drawings and specifications, and a listing of those drawings and specifications, necessary to define the configuration and the design features of the product shown to comply with the applicable type-certification basis and environmental protection requirements;
2. Information on materials and processes and on methods of manufacture and assembly of the product necessary to ensure the conformity of the product;
3. An approved airworthiness limitations section of the instructions for continued airworthiness as defined by the applicable airworthiness code; and
4. Any other data necessary to allow by comparison, the determination of the airworthiness, the characteristics of noise, fuel venting, and exhaust emissions (where applicable) of later products of the same type.

### **MCAR-21.A.41      Type-certificate**

The type-certificate is considered to include the type design, the operating limitations, the type-certificate data sheet for airworthiness and emissions, the applicable type-certification basis and environmental protection requirements with which the State of Design records compliance, and any other conditions or limitations prescribed for the product in the applicable certification specifications and environmental protection requirements. The aircraft type-certificate, in addition, includes the applicable operational suitability data certification basis, the operational suitability data and the type-certificate data sheet for noise. The engine type-certificate data sheet includes the record of emission compliance.

**MCAR-21.A.62      Availability of operational suitability data**

The holder of the type-certificate, for which a type acceptance certificate has been issued in accordance with MCAR-21.A.15B, shall make available:

- (a) at least one set of complete operational suitability data prepared in accordance with the applicable operational suitability certification basis, to all known operators of the aircraft, before the operational suitability data must be used by a training organisation or a Maldivian operator; and
- (b) any change to the operational suitability data to all known Maldivian operators of the aircraft; and
- (c) on request, the relevant data referred to in points (a) and (b) above, to:
  - 1. the CAA; and
  - 2. any person required to comply with one or more elements of this set of operational suitability data.

**(Subpart C — RESERVED)**

## **Subpart D — CHANGES TO TYPE-CERTIFICATES**

### **MCAR-21.A.90A Scope**

This Subpart establishes the procedure for the approval of changes to type-certificates, and established the rights and obligations of the applicants for, and holders of, those approvals. This Subpart also defines standard changes that are not subject to an approval process under this Subpart.

### **GM to 21.A.90A Scope**

The term 'changes to the type certificate' is consistently used in MCAR-21, Subpart D and E, as well as in the related AMC and GM. This term does not refer to changing the document that reflects the type certificate (TC) but to the concept of TC as defined in 21.A.41. It means that the processes for approval of changes, as described in the said two Subparts, do not only apply to changes to the type design, but may also apply to changes to:

- the operating limitations;
- the type certificate data sheet (TCDS) for airworthiness and emissions;
- the applicable type certification basis and environmental protection requirements with which the Agency demonstrates compliance;
- any other conditions or limitations prescribed for the product in the applicable certification specifications (CSs) and environmental protection requirements;
- the applicable operational suitability data (OSD) certification basis;
- the OSD; and
- the TCDS for noise.

NOTE: OSD is only applicable to aircraft TCs and not engine or propeller TCs. Therefore, changes to OSD are only relevant for changes to aircraft TCs.

### **MCAR-21.A.90B Standard Changes**

(a) Standard changes are changes to a type-certificate:

1. in relation to:
  - (i) aeroplanes of 5700 kg Maximum Take-Off Mass (MTOM) or less;
  - (ii) rotorcraft of 3175 kg MTOM or less;
  - (iii) sailplanes, powered sailplanes, balloons and airships, as defined in ELA1 or ELA2,
2. that follow design data included in certification specifications accepted by the CAA containing acceptable methods, techniques and practices for carrying out and identifying standard changes, including the associated instructions for continuing airworthiness; and
3. that are not in conflict with TC holders data.

(b) Points 21.A.91 to 21.A.105 are not applicable to standard changes.

## **GM 21.A.90B Standard changes – Certification Specifications**

EASA CS-STAN contains the certification specification referred to in 21.A.90B(a)2. Guidance on the implementation of Standard Changes and Standard Repairs can be found in AMC M.A.801 of the AMC to MCAR-M.

## **MCAR-21.A.91 Classification of changes to a type-certificate**

Changes to a type-certificate are classified as minor and major. A 'minor change' is one that has no appreciable effect on the mass, balance, structural strength, reliability, operational characteristics, noise, fuel venting, exhaust emission, operational suitability data or other characteristics affecting the airworthiness of the product. Except where CAA finds that the change in design, power, thrust, or mass is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required, all other changes are 'major changes' under this Subpart. Major and minor changes shall be approved in accordance with MCAR 21.A.95 or MCAR 21.A.97 as appropriate, and shall be adequately identified.

## **GM 21.A.91 Classification of changes to type-certificate**

### 1. PURPOSE OF CLASSIFICATION

Classification of changes to a type-certificate (TC) into MAJOR or MINOR is to determine the approval route to be followed in MCAR-21 Subpart D, i.e., either MCAR-21.A.95 or MCAR-21.A.97, or alternatively whether application and approval has to be made in accordance with MCAR-21 Subpart E.

### 2. INTRODUCTION

2.1. MCAR-21.A.91 proposes criteria for the classification of changes to a type-certificate as minor or major.

- i. This GM is intended to provide guidance on the term 'appreciable effect' affecting the airworthiness of the product or affecting any of the other characteristics mentioned in MCAR-21.A.91, where 'airworthiness' is interpreted in the context of a product in conformity with type design and in condition for safe operation. It provides complementary guidelines to assess a change to the type-certificate in order to fulfil the requirements of MCAR-21.A.91 where classification is the first step of a procedure.

Note: For classification of Repairs see GM 21.A.435.

- ii. Although this GM provides guidance on the classification of major changes, as opposed to minor changes as defined in MCAR-21.A.91, the GM and MCAR-21.A.91 are deemed entirely compatible.

### 3. ASSESSMENT OF DESIGN CHANGE FOR CLASSIFICATION

#### 3.1. Changes to the TC

21.A.91 addresses changes to all aspects of a TC. This includes changes to the type design, as defined in 21.A.31, as well as to the other constituents of a TC, as defined in 21.A.41. This GM provides further guidance on changes to the type design and changes to the operational suitability data (OSD). A change to a TC can include a change to the type design and/or a change to the OSD.

#### 3.2. Separate classification for type design and OSD

Although in the end, the change to the TC, which includes a change to type design and a change to OSD, will have only one classification, it will be possible to classify the different components of the change independently.

#### 3.3. Classification Process (see attached diagram)

MCAR-21.A.91 requires all changes to be classified as either major or minor, using the criteria of MCAR-21.A.91.

Wherever there is doubt as to the classification of a change, the CAA should be consulted for clarification.

When the strict application of the paragraph 3.4 criteria results in a major classification, the applicant may request re-classification, if justified, and the CAA could take the responsibility in re-classifying the change.

A simple design change planned to be mandated by an airworthiness directive may be re-classified minor due to the involvement of the State of Design in the continued airworthiness process.

Reasons for a classification decision should be recorded.

#### 3.4. Complementary guidance for classification of changes.

A change to the type design is judged to have an 'appreciable effect on the mass, balance, structural strength, reliability, operational characteristics, noise, fuel venting, exhaust emission, operational suitability or other characteristics affecting the airworthiness of the product' and therefore should be classified as major, in particular but not only when one or more of the following conditions are met:

- (a) Where the change requires an adjustment of the type-certification basis or the OSD certification basis (special conditions or equivalent safety findings) other than elect to comply with later certification specifications.
- (b) Where the applicant proposes a new interpretation of the certification specifications used for the type type-certification basis or the OSD certification



basis, that has not been published as AMC material or otherwise agreed with the CAA.

- (c) Where the demonstration of compliance uses methods that have not been previously accepted as appropriate for the nature of the change.
- (d) Where the extent of new substantiation data necessary to comply with the applicable certification specifications and the degree to which the original substantiation data has to be re-assessed and re-evaluated is considerable.
- (e) Where the change is made mandatory by an airworthiness directive or the change is the terminating action of an airworthiness directive (ref. MCAR-21.A.3B). See note 1.
- (f) Where the design change introduces or affects functions where the failure effect is classified catastrophic or hazardous.

Note 1: The change previously classified minor and approved prior to the airworthiness directive issuance decision needs no re-classification. However, the CAA retains the right to review the change and re-classify/re-approve if found necessary.

Note 2: These above conditions are an explanation of the criteria noted in MCAR-21.A.91.

For an understanding of how to apply the above conditions it is useful to take note of the examples given in Appendix A to GM 21.A.91.

### 3.5. Complementary guidance on the classification of changes to OSD

This paragraph provides firstly general guidance on minor OSD change classification, and secondly additional guidance specific to each OSD constituent.

Changes to OSD are considered minor when they:

- incorporate optional information (representing improvements/enhancements);
- provide clarifications, interpretations, definitions or advisory text; or
- do not change the intent of the OSD document, e.g. changes to:
  - o titles, numbering, formatting, applicability;
  - o order, sequence, pagination; or
  - o sketches, figures, units of measurement, and correction of editorial mistakes such as:
    - spelling; or
    - reference numbers.

Given the structure and individual intent of the separate OSD constituents, the interpretation of 'appreciable' is also affected by the specific nature of the applicable

certification specifications (CS) for that constituent. Therefore, specific guidance on each of the OSD constituents is provided hereafter.

(a) Master minimum equipment list (MMEL)

1. A change to the MMEL is judged to have an ‘appreciable effect on the operational suitability of the aircraft’ and, therefore, should be classified as major, in particular but not only when one or more of the following conditions are met:
  - i. where the change requires an adjustment of the OSD certification basis;
  - ii. where the applicant proposes changes to the means of compliance with the requirements used for the OSD certification basis (i.e. MMEL safety methodology);
  - iii. where the extent of substantiation data and the degree to which the substantiation data has to be assessed and evaluated is considerable, in particular but not only when:
    - (A) the substantiation data involving the review of failure conditions that are classified as hazardous or catastrophic has to be evaluated;
    - (B) the assessment of the failure effects (including next worst failure/event effects) on crew workload and the applicable crew procedures has to be evaluated; or
    - (C) the capability of the aircraft to perform types of operation (e.g. extended-range twin operations (ETOPS), instrument flight rules (IFR)) under MMEL is extended.
2. A change to the MMEL is judged not to have an ‘appreciable effect on the operational suitability of the aircraft’ and, therefore, should be classified as minor, in particular but not only when one or more of the following conditions are met:

Modifications to an existing item when:

- i. the change only corresponds to the applicability of an item for configuration management purposes;
- ii. the change corresponds to the removal of an item;
- iii. the change corresponds to the increase in the number of items required for dispatch; and
- iv. the change corresponds to a reduction in the rectification interval of an item.

Addition of a new item when:

- v. it is considered as non-safety-related (refer to EASA CS-MMEL, GM2 MMEL.110); or
- vi. it is indicated as eligible for minor change classification in 1 to GM1 EASA CS-MMEL-145.

(b) Flight crew data (FCD)

1. FCD change related to change to the type design

When classifying the FCD change as minor or major, the method of EASA CS-FCD, Subpart D should be used.

- i. An analysis should be performed to assess the change impact on the FCD through the allocation of difference levels realised with operator difference requirement (ODR) tables as per EASA CS FCD.400. In this case, the base aircraft is the aircraft without the type design change, whereas the candidate aircraft is the aircraft which includes the type design change.

(A) If a no more than level B difference is assigned for training, checking and currency for the candidate aircraft, the related FCD change should be classified as minor.

(B) If a difference level C, D or E for training, checking and currency is assigned to the candidate aircraft, the related FCD change should be classified as major.

- ii. Notwithstanding the above, the change to FCD should be classified as major when a T1 or T2 test is found necessary by the applicant to confirm that the aircraft with the type design change is not a new type for pilot type rating.

2. Stand-alone changes to FCD are not related to any type design changes. They may be triggered for example by in-service experience or by the introduction of data at the request of the applicant after type certification.

- i. Introduction of credits in training, checking or currency should be classified as major. Example: addition of further-differences training, common take-off and landing credits, etc.

- ii. Stand-alone changes to FCD that correspond to a change of the intent of a data should be classified as major. Example: addition of a training area of special emphasis (TASE) or prerequisite, expansion of a TASE.

(c) Cabin crew data (CCD)

1. OSD change related to change to the type design  
When classifying the OSD CCD change as minor or major, the method from EASA CS-CCD, Subpart B should be used.
  - i. An analysis should be performed to assess the change impact on the OSD CCD through the identification of the difference and its impact on operation in the aircraft difference table (ADT) as per EASA CS CCD.200. In this case, the base aircraft is the aircraft without the type design change, whereas the candidate aircraft is the aircraft which includes the type design change.
    - (A) If the difference has no impact on the operation of an element of the ADT for the candidate aircraft, the related OSD CCD change should be classified as minor.
    - (B) If the difference has an impact on the operation of an element of the ADT for the candidate aircraft, the related OSD CCD change should be classified as major.
  - ii. Notwithstanding the above, the change to OSD CCD should be classified as major when an ADT analysis is found necessary by the applicant to confirm that the aircraft with the type design change is not a new type for cabin crew.
2. Stand-alone changes to OSD CCD are not related to any type design changes. They may be triggered for example by in-service experience or by the introduction of data at the request of the applicant after type certification.
  - i. Stand-alone changes to cabin aspects of special emphasis (CASE) should be classified as major. Example: addition of further CASE, expansion of CASE.
  - ii. When classifying stand-alone changes to type-specific data for cabin crew the method from EASA CS-CCD, Subpart B should be used. An analysis should be performed to assess the change impact on the type-specific data through the identification of the difference and its impact on operation in the ADT as per EASA CS CCD.200.
    - (A) If the change does not concern a determination element of EASA CS CCD.205, the stand-alone change should be classified as minor.
    - (B) If the change has no impact on the operation of an element of the ADT, the stand-alone change should be classified as minor.
    - (C) If the change has an impact on the operation of an element of the ADT, the stand-alone change should be classified as major.

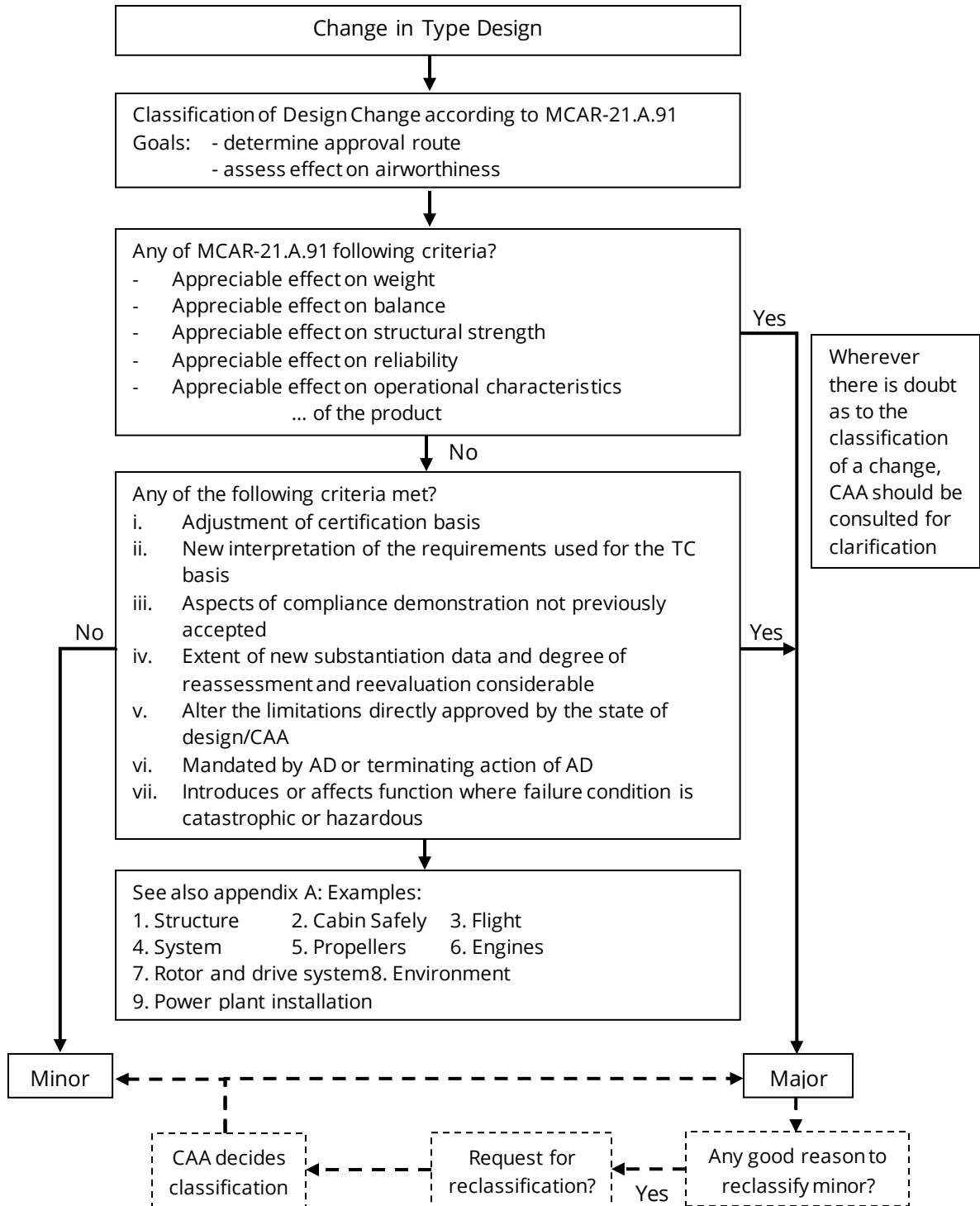
(d) Simulator data (SIMD)

The OSD constituent 'simulator data' does not include the data package that is necessary to build the simulator. It includes only the definition of the scope of validation source data to support the objective qualification of a simulator. So, when this guidance discusses changes to 'simulator data', this concerns only changes to the 'definition of scope of validation source data' and not changes to the data package.

1. A change to the SIMD should be classified as major, in particular but not only when one or more of the following conditions are met:
  - i. when a change to the SIMD introduces validation source data from an engineering platform where the process to derive such data has not been audited by the Agency in the initial SIMD approval; or
  - ii. when the process to derive validation source data from an engineering platform is changed.
2. A change to the SIMD could be classified as minor, in particular but not only when one or more of the following conditions are met:
  - i. changes to engineering validation data independent of the aircraft due to improvements or corrections in simulation modelling (e.g. aerodynamics, propulsion);
  - ii. configuration changes to the aircraft where the process to derive validation source data from an engineering platform is unchanged;
  - iii. changes to validation source data by using better, more applicable flight test data; or
  - iv. editorial changes to the validation data roadmap (VDR).

(e) Maintenance certifying staff data (MCSD)  
[Reserved]

**Flowchart 1 to GM 21.A.91 – Classification process**



**MCAR-21.A.92 Eligibility**

Any natural or legal person may apply for approval of a change to a type-certificate under this Subpart.

**MCAR-21.A.93 Application**

An application for approval of a change to a type design shall be made in a form and manner established by the CAA and shall include:

- (a) A description of the change identifying
  1. All parts of the type design and the approved manuals affected by the change; and
  2. The certification specifications and environmental protection requirements with which the change has been designed to comply in accordance with MCAR 21.A.101.
- (b) (reserved)
- (c) When the change affects the operational suitability data, the application shall include, or be supplemented after the initial application to include the necessary changes to the operational suitability data.

## **MCAR-21.A.95**                      **Minor changes**

Minor changes to a type-certificate shall be classified and approved either:

- (a) By the CAA; or
- (b) By a design organization acceptable to CAA, provided
  1. The design organisation furnishes a handbook to the CAA describing, directly or by cross-reference, the organisation, the relevant procedures and the products or changes to products to be designed.
  2. The handbook is amended as necessary to remain an up-to-date description of the organisation, and copies of amendments shall be supplied to the CAA.

## **AMC 21.A.95 (b)1**                      **Minor changes**

Model content of handbook for organisations designing minor changes to type design or minor repairs to products.

### Part 1. Organisation

- 1.1. Objective of handbook and binding statement
- 1.2. Responsible person for administration of handbook
- 1.3. Amendment procedure
- 1.4. List of effective pages
- 1.5. Distribution list
- 1.6. Presentation of design organisation (including locations)
- 1.7. Scope of work (with identification of type and models of products)
- 1.8. Organisation charts
- 1.9. Human resources
- 1.10. Management staff
- 1.11. Certifying personnel (i.e. the persons responsible to):
  - i. classify changes to type design or repairs
  - ii. verify compliance
  - iii. approve minor changes to type design and minor repairs
  - iv. issue information or instructions
- 1.12. Independent system monitoring

### Part 2. Procedures

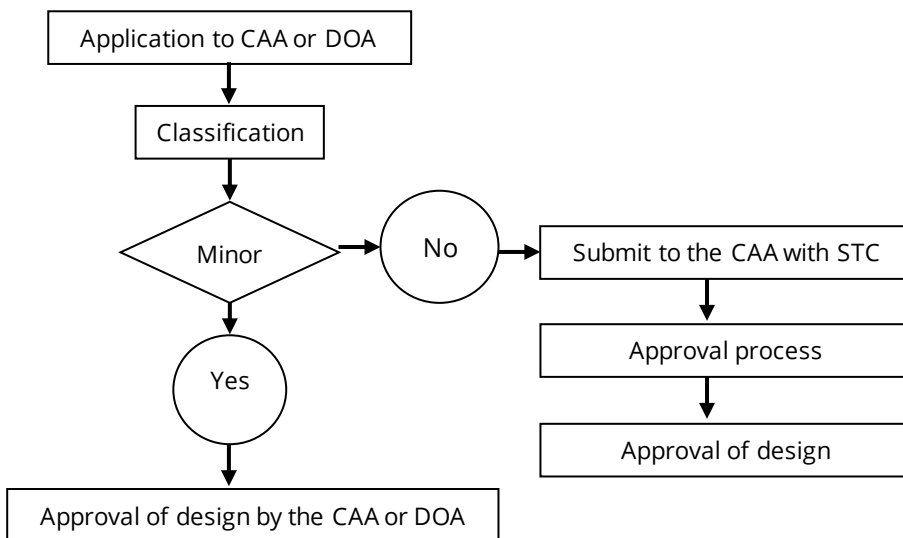
- 2.1. Management of changes to type design and design of repairs
  - i. configuration control
  - ii. classification
  - iii. approval of minor changes to type design and minor repairs
- 2.2. Control of design subcontractors
- 2.3. Collecting/Investigating of failures, malfunctions and defects



- 2.4. Co-ordination with production
- 2.5. Documentation control
  - i. in relations with the changes and repairs
  - ii. in relation with failures/malfunctions and defects (i.e. Services - Bulletins)
- 2.6. Record keeping

### GM 21.A.95 Type design change (modification) approval flowchart

Flowchart 1 to GM 21.A.95 – Design change approval



#### GM 21.A.95(b) Minor changes

An owner/operator may get their minor change classified and approved by the TC/STC holder even though the TC/STC holder has not submitted the handbook to the CAA.

The requirement to submit a handbook to CAA is for design organisations other than TC/STC holder.

### **MCAR-21.A.97 Major changes**

An applicant for approval of a major change shall submit a supplemental type certificate (STC) which meets Subpart E requirements.

Approval of a major change to a type-certificate is limited to that or those specific configuration(s) in the type-certificate upon which the change is made.

### **GM 21.A.97 Type design change (modification) approval flowchart**

(Refer to GM 21.A.95)

### **MCAR-21.A.101 Designation of applicable certification specifications and environmental protection requirements**

An applicant for a change to a type certificate shall demonstrate that the changed product complies with the type-certification basis incorporated by reference in the type-certificate, and with the applicable environmental protection requirements laid down in ICAO Annex 16.

### **AMC 21.A.101 Designation of applicable certification specifications and environmental protection requirements – Explanation of terminology**

Type-certification basis: the applicable airworthiness and OSD certification specifications as established for the change according to point MCAR-21.A.101, as appropriate, special conditions, equivalent level of safety findings, elects to comply, and deviations applicable to the product to be certified.

### **MCAR-21.A.103 Issue of approval**

- (a) The applicant shall be entitled to have a major change to a type design approved by the CAA after submitting the STC referred to in MCAR 21.A.97. Where a major change to an aircraft type-certificate is approved before compliance with the applicable operational suitability data certification basis is demonstrated, the applicant shall demonstrate compliance with the operational suitability data certification basis before the operational suitability data must actually be used.
- (b) A minor change to a type design shall only be approved in accordance with MCAR 21.A.95 if it is shown that the changed product meets the applicable certification specifications/airworthiness code, as specified in MCAR 21.A.101.

### **MCAR-21.A.105 Record keeping**

- (a) For each minor change, all relevant design information, drawings and test reports, including inspection records for the changed product tested, shall be held by the applicant at the disposal of the CAA and shall be retained in order to provide the information necessary to ensure the continued airworthiness, continued validity of the operational suitability data and compliance with applicable environmental protection requirements of the changed product.
- (b) For each major change, the relevant STC and any other data referred to in the STC, shall be held by the applicant at the disposal of the CAA and shall be retained in order to provide the information necessary to ensure the continued airworthiness, continued validity of the operational suitability data and compliance with applicable environmental protection requirements of the changed product.

## **Subpart E — SUPPLEMENTAL TYPE-CERTIFICATES**

### **MCAR-21.A.111                      Scope**

- a) The CAA does not issue supplemental type certificates.
- b) This subpart describes the requirements for the acceptance of supplemental type certificates.

### **MCAR-21.A.111B    Acceptability of foreign supplemental type certificates**

The following foreign supplemental type certificates may be accepted by the CAA:

- (a) a supplemental type certificate issued by EASA
- (b) a supplemental type certificate accepted by EASA
- (c) a supplemental type certificate issued by an ICAO Contracting State in compliance with Annexes 8 and 16 to the Convention on International Civil Aviation.

### **MCAR-21.A.111C    Incorporation of supplemental type certificates**

An STC shall be incorporated in accordance with subpart D or M.

**(Subpart F — RESERVED)**

**(Subpart G — RESERVED)**

## **Subpart H — CERTIFICATES OF AIRWORTHINESS**

### **MCAR-21.A.171    Scope**

This Subpart establishes the procedure for issuing airworthiness certificates.

### **MCAR-21.A.172    Eligibility**

Any natural or legal person under whose name an aircraft is registered or will be registered in the Maldives ('State of registry'), or its representative, shall be eligible as an applicant for an airworthiness certificate for that aircraft under this Subpart.

### **MCAR-21.A.173    Classification**

Certificates of airworthiness shall be issued to aircraft which conform to a type acceptance certificate that has been issued in accordance with this Regulation.

**MCAR-21.A.174 Application**

(a) Pursuant to MCAR-21.A.172, an application for an airworthiness certificate shall be made in a form and manner established by the CAA.

(b) Each application for a certificate of airworthiness shall include:

1. the class of airworthiness certificate applied for;
2. with regard to new aircraft:
  - (i) A statement of conformity  
— issued by the production organisation;
  - (ii) A weight and balance report with a loading schedule;
  - (iii) The flight manual, when required by the applicable certification specifications for the particular aircraft.
3. with regard to used aircraft:
  - (i) a statement by the national aviation authority of the State where the aircraft is, or was, registered, reflecting the airworthiness status of the aircraft on its register at time of transfer;
  - (ii) a weight and balance report with a loading schedule;
  - (iii) the flight manual when such material is required by the applicable airworthiness code for the particular aircraft;
  - (iv) historical records to establish the production, modification, and maintenance standard of the aircraft;
  - (v) a recommendation for the issuance of a certificate of airworthiness and an airworthiness review certificate following an airworthiness review in accordance with MCAR-M.

(c) Unless otherwise agreed, the statements referred to in subparagraphs (b)(2)(i) and (b)(3) shall be issued no more than 60 days before presentation of the aircraft to the CAA.

**AMC 21.A.174(b)2(i) Application**

A statement of conformity confirms that that the product, part or appliance conforms to the approved design data and is in condition for safe operation. Typical statements of conformity are:

- (i) EASA Form 52 issued for complete aircraft by EASA approved production organisations



(ii) FAA Form 8130-9 (previously Form 317) issued for complete aircraft in USA

(iii) CASA Form 724 in Australia

**AMC 21.A.174(b)3(i) Application**

A statement reflecting the airworthiness state can be:

- (i) An Airworthiness Review Certificate (ARC) issued under European Commission Regulation (EU) 2018/1142 (Part M)
- (ii) An Export Certificate of Airworthiness issued within 60 days preceding the date of receipt of the application by the CAA
- (iii) A current domestic Certificate of Airworthiness issued or renewed less than twelve months prior to the date of receipt of the application by the CAA
- (iv) A current domestic Certificate of Airworthiness issued or renewed more than twelve months prior to the date of receipt of the application by the CAA and a statement from the exporting authority

**MCAR-21.A.175    Language**

The manuals, placards, listings, and instrument markings and other necessary information required by applicable certification specifications/airworthiness code shall be presented in English and where applicable in Dhivehi.

**MCAR-21.A.177    Amendment or modification**

An airworthiness certificate may be amended or modified only by CAA.

**(MCAR-21.A.179    Reserved)**

**MCAR-21.A.180    Inspections**

The holder of the airworthiness certificate shall provide access to the aircraft for which that airworthiness certificate has been issued upon request by CAA.

**MCAR-21.A.181 Duration and continued validity**

- (a) An airworthiness certificate shall be issued for an unlimited duration. It shall remain valid subject to:
1. compliance with the applicable type-design and continuing airworthiness requirements;
  2. the aircraft remaining on the Maldivian civil aircraft register;
  3. the type acceptance certificate under which it is issued not being previously invalidated under MCAR 21.A.16; and
  4. the certificate not being surrendered or revoked by the CAA.
- (b) Upon surrender or revocation, the certificate shall be returned to the CAA.

**MCAR-21.A.182 Aircraft identification**

Each applicant for an airworthiness certificate under this Subpart shall demonstrate that its aircraft is identified in accordance with Subpart Q.

**MCAR-21.A.185 Training**

- (a) Each applicant for an airworthiness certificate for the first aircraft of the type registered under the applicant's name, shall provide maintenance and flight crew type training to a CAA Inspector.
- (b) Each holder of a valid airworthiness certificate for a type accepted aircraft shall provide maintenance and flight crew recurrent training on that type to a CAA Inspector.
- (c) Each holder of a valid airworthiness certificate for a type accepted aircraft shall provide:
1. A minimum of one flight duty period per week to a CAA Inspector; and
  2. A minimum of one day maintenance experience per week to a CAA Inspector.

## **Subpart I — NOISE CERTIFICATES**

### **MCAR-21.A.201 Scope**

This Subpart establishes the procedure for issuing noise certificates.

### **MCAR-21.A.203 Eligibility**

Any natural or legal person under whose name an aircraft is registered or will be registered in the Maldives (State of registry), or its representative, shall be eligible as an applicant for a noise certificate for that aircraft under this Subpart.

### **MCAR-21.A.204 Application**

(a) Pursuant to MCAR-21.A.203, an application for a noise certificate shall be made in a form and manner established by the CAA.

(b) Each application shall include:

1. with regard to new aircraft:

(i) A statement of conformity:

— issued by the production organisation; and

(ii) The noise information determined in accordance with the applicable noise requirements.

2. with regard to used aircraft:

(i) The noise information determined in accordance with the applicable noise requirements; and

(ii) Historical records to establish the production, modification, and maintenance standard of the aircraft.

(c) Unless otherwise agreed, the statements referred to in subparagraph (b)(1) shall be issued no more than 60 days before presentation of the aircraft to the CAA.

**MCAR-21.A.207      Amendment or modification**

A noise certificate may be amended or modified only by the CAA.

**(MCAR-21.A.209      Reserved)**

**MCAR-21.A.210      Inspections**

The holder of the noise certificate shall provide access to the aircraft for which that noise certificate has been issued upon request by the CAA for inspection.

**MCAR-21.A.211      Duration and continued validity**

(a) A noise certificate shall be issued for an unlimited duration. It shall remain valid subject to:

1. compliance with the applicable type-design, environmental protection and continuing airworthiness requirements;
2. the aircraft remaining on the Maldivian civil aircraft register;
3. the type acceptance certificate under which it is issued not being previously invalidated under MCAR 21.A.16; and
4. the certificate not being surrendered or revoked by the CAA.

(b) Upon surrender or revocation, the certificate shall be returned to the CAA.

## **Subpart J — DESIGN ORGANISATION APPROVAL**

### **MCAR-21.A.231 Scope**

- (a) The CAA does not issue design organisation approvals.
- (b) This Subpart establishes the procedure for the acceptance of design organisation approvals.

### **MCAR 21.A.232 Acceptability of foreign design organisations**

The following foreign design organisation approvals may be accepted by the CAA:

- (a) a design organisation approval issued by EASA
- (b) a design organisation approval accepted by EASA
- (c) a design organisation approval issued by an ICAO Contracting State in compliance with Annexes 8 and 16 to the Convention on International Civil Aviation.

## **Subpart K — PARTS AND APPLIANCES**

### **MCAR-21.A.301 Scope**

This Subpart establishes the procedure relating to the approval of parts and appliances.

### **MCAR-21.A.303 Acceptability of parts and appliances**

The acceptance of parts and appliances to be installed in a type-certificated product shall meet the following requirements:

- (a) compliance with applicable requirements in conjunction with the type-certification procedures for the product in which it is to be installed; or
- (b) compliance with Subpart O; or
- (c) in the case of standard parts, in accordance with officially recognised Standards.

### **AMC 21.A.303(c) Standard Parts**

1. In this context a part is considered as a 'standard part' where it is designated as such by the design approval holder responsible for the product, part or appliance, in which the part is intended to be used. In order to be considered a 'standard part', all design, manufacturing, inspection data and marking requirements necessary to demonstrate conformity of that part should be in the public domain and published or established as part of officially recognised Standards, or
2. For sailplanes and powered sailplanes, where it is a non-required instrument and/or equipment certified under the provision of CS 22.1301(b) or equivalent, if that instrument or equipment, when installed, functioning, functioning improperly or not functioning at all, does not in itself, or by its effect upon the sailplane and its operation, constitute a safety hazard.

'Required' in the term 'non-required' as used above means required by the applicable certification specifications (CS 22.1303, 22.1305 and 22.1307 or equivalent) or required by the relevant operating regulations and the applicable Rules of the Air or as required by Air Traffic Management (e.g. a transponder in certain controlled airspace).

Examples of equipment which can be considered standard parts are electrical variometers, bank/slip indicators ball type, total energy probes, capacity bottles (for variometers), final glide calculators, navigation computers, data logger / barograph / turnpoint camera, bug-wipers and anti-collision systems.

Equipment which must be approved in accordance to the certification specifications shall comply with the applicable TSO or equivalent and is not considered a standard part (e.g. oxygen equipment).



**GM 21.A.303(c) Officially recognised Standards**

In this context “officially recognised Standards” means:

1. Those standards established or published by an official body whether having legal personality or not, which are widely recognised by the air transport sector as constituting good practice; or
2. The standard used by the manufacturer of the equipment as mentioned in paragraph 2 of AMC 21.A.303(c).

**(MCAR-21.A.305 Reserved)**

**MCAR-21.A.307 Release of parts and appliances for installation**

A part or appliance shall be eligible for installation in a type accepted product when it is in a condition for safe operation, and it is:

- (a) accompanied by an authorised release certificate (CAA Form 1 or equivalent), certifying that the item was manufactured in conformity to approved design data and is marked in accordance with Subpart Q; or
- (b) a standard part: or
- (c) in the case of ELA1 or ELA2 aircraft, a part or appliance that is:
  - 1. not life-limited, nor part of the primary structure, nor part of the flight controls;
  - 2. manufactured in conformity to applicable design;
  - 3. marked in accordance with Subpart Q;
  - 4. identified for installation in the specific aircraft;
  - 5. to be installed in an aircraft for which the owner has verified compliance with the conditions 1 through 4 and has accepted responsibility for this compliance.

**(Subpart L — RESERVED)**

## **Subpart M — REPAIRS**

### **MCAR-21.A.431A Scope**

- (a) This Subpart establishes the procedure for the approval of repair design.
- (b) This Subpart defines standard repairs that are not subject to an approval process under this Subpart.
- (c) A 'repair' means elimination of damage and/or restoration to an airworthy condition following initial release into service by the manufacturer of any product, part or appliance.
- (d) Elimination of damage by replacement of parts or appliances without the necessity for design activity shall be considered as a maintenance task and shall therefore require no approval under this Regulation.
- (e) A repair to a European TSO (ETSO) article other than an Auxiliary Power Unit (APU) shall be treated as a change to the ETSO design and shall be processed in accordance with Subpart O.

### **GM 21.A.431A(a) Scope**

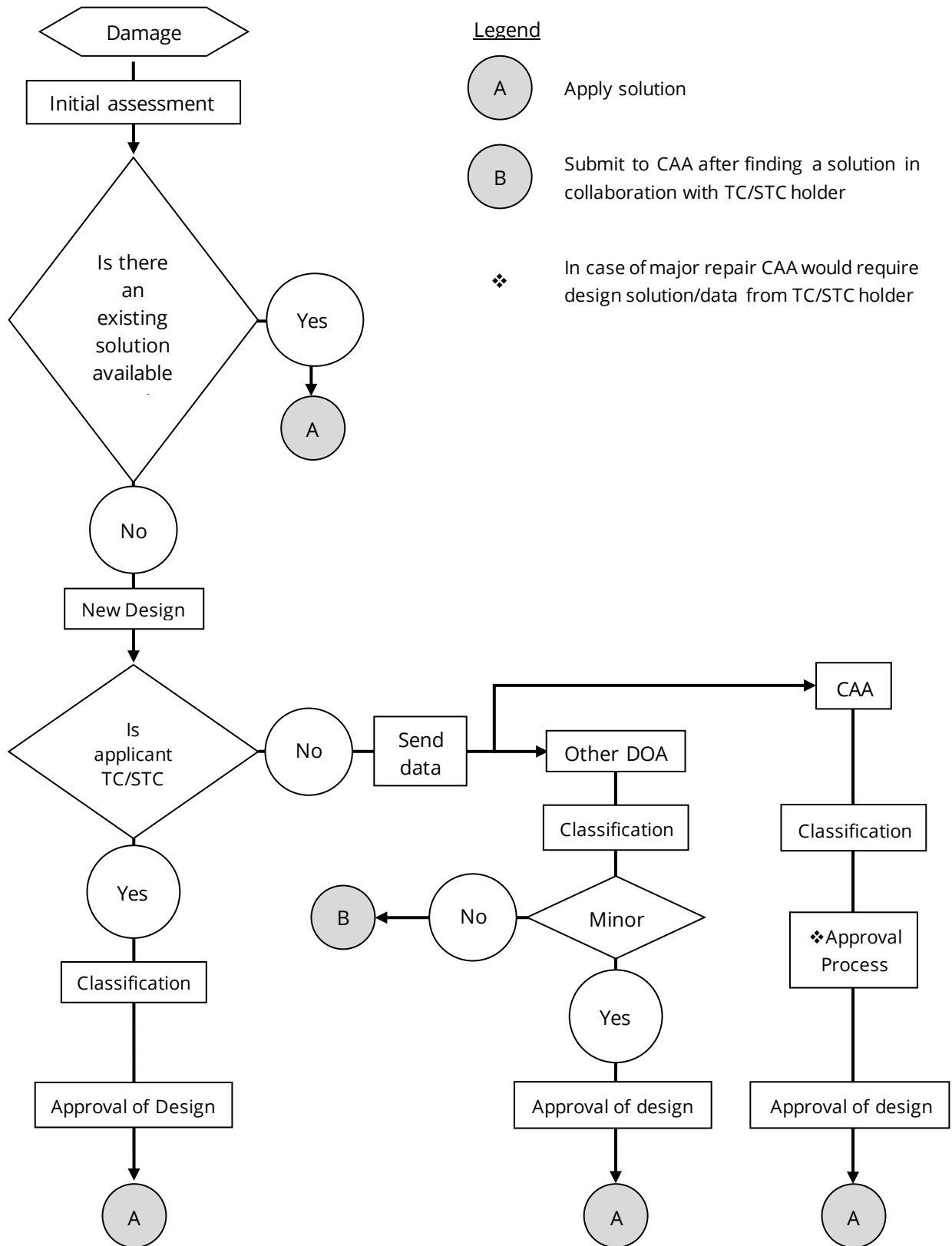
Manuals and other instructions for continued airworthiness (such as the Manufacturers Structural Repair Manual, Maintenance Manuals and Engine Manuals provided by the holder of the type-certificate, supplemental type-certificate, or APU TSO authorisation as applicable) for operators, contain useful information for the development and approval of repairs.

When these data are explicitly identified as approved, they may be used by operators without further approval to cope with anticipated in-service problems arising from normal usage provided that they are used strictly for the purpose for which they have been developed.

Approved data is data which is approved either by the state of design/CAA, or by an appropriately approved design organisation.

Flowchart 1 to GM 21.A.431(a) addresses the procedures that should be followed for approval of a repair.

**Flowchart 1 to GM 21.A.431(a) - Repair approval procedure**



### **GM 21.A.431A(e) Repairs to ETSO articles other than an APU**

A repair to an ETSO article other than an APU can be either be seen:

1. In the context of an ETSO authorisation, i.e., when an article as such is specifically approved under Subpart O, with dedicated rules that give specific rights and obligations to the designer of the article, irrespective of any product type design or change to the type design. For a repair to such an article, irrespective of installation on any aircraft, Subpart O should be followed; or
2. When an airline or a maintenance organisation is designing a new repair (based on data not published in the TC holder or Original Equipment Manufacturer documentation) on an article installed on an aircraft, such a repair can be considered as a repair to the product in which the article is installed, not to the article taken in isolation. Therefore Subpart M can be used for the approval of this repair, that will be identified as 'repair to product x affecting article y', but not 'repair to article y'.

### **MCAR-21.A.431B Standard repairs**

- (a) Standard repairs are repairs:
- (1) in relation to:
    - i. aeroplanes of 5 700 kg Maximum Take-Off Mass (MTOM) or less;
    - ii. rotorcraft of 3 175 kg MTOM or less;
    - iii. sailplanes and powered sailplanes, balloons and airships as defined in ELA1 or ELA2.
  - (2) that follow design data included in certification specifications accepted by the CAA, containing acceptable methods, techniques and practices for carrying out and identifying standard repairs , including the associated instructions for continuing airworthiness; and
  - (3) that are not in conflict with TC holders data.
- (b) Points 21.A.432A to 21.A.451 are not applicable to standard repairs.

### **GM 21.A.431B Standard repairs – Certification Specifications**

EASA CS-STAN contains the certification specifications referred to in 21.A.431B(a)2. Guidance on the implementation of Standard Changes and Standard Repairs can be found in AMC M.A.801 of the AMC to MCAR-M.

**MCAR-21.A.432A Eligibility**

Any natural or legal person shall be eligible to apply for approval of a repair design.

**MCAR-21.A.433 Repair design**

(a) The applicant for approval of a repair design shall:

1. Demonstrate compliance with the type-certification basis and environmental protection requirements incorporated by reference in the type-certificate or supplemental type-certificate, as applicable, or those in effect on the date of application (for repair design approval), plus any amendments to those certification specifications/airworthiness code or special conditions the State of Design/CAA finds necessary to establish a level of safety equal to that established by the type-certification basis incorporated by reference in the type-certificate, supplemental type-certificate or APU TSO authorisation.
2. Submit all necessary substantiation data, when requested by the CAA.
3. Declare compliance with the certification specifications/airworthiness code and environmental protection requirements of subparagraph (a)(1).

(b) Where the applicant is not the type-certificate or supplemental type-certificate or APU TSO authorisation holder, as applicable, the applicant may comply with the requirements of paragraph (a) through the use of its own resources or through an arrangement with the type-certificate or supplemental type-certificate or APU TSO authorisation holder as applicable.

**AMC 21.A.433 (a) Repair design and Record Keeping**

1. Relevant substantiation data associated with a new major repair design and record keeping should include:
  - a. damage identification and reporting source,
  - b. major repair design approval sheet identifying applicable specifications and references of justifications,
  - c. repair drawing and/or instructions and scheme identifier,
  - d. correspondence with the TC, STC, or APU TSO authorisation holder, if its advice on the design has been sought,
  - e. structural justification (static strength, fatigue, damage tolerance, flutter etc.) or references to this data,
  - f. effect on the aircraft, engines and/or systems, (performance, flight handling, etc., as appropriate)



- g. effect on maintenance programme,
  - h. effect on Airworthiness limitations, the Flight Manual and the Operating Manual,
  - i. weight and moment change,
  - j. special test requirements.
2. Relevant minor repair documentation includes paragraphs 1(a) and (c). Other points of paragraph 1 may be included where necessary. If the repair is outside the approved data, justification for classification is required.
  3. Special consideration should be given to repairs that impose subsequent limitations on the part, product or appliance, (e.g., engine turbine segments that may only be repaired a finite number of times, number of repaired turbine blades per set, oversizing of fastener holes, etc.).
  4. Special consideration should also be given to Life Limited parts and Critical Parts, notably with the involvement of the type-certificate or STC holder, when deemed necessary under MCAR-21.A.433(b).
  5. Repairs to engine or APU critical parts would normally only be accepted with the involvement of the TC holder.

### **MCAR-21.A.435 Classification of repairs**

- (a) A repair may be 'major' or 'minor'. The classification shall be made in accordance with the criteria of MCAR-21.A.91 for a change in the type-certificate.
- (b) A repair shall be classified 'major' or 'minor' under paragraph (a) either:
  - 1. By the CAA, or
  - 2. By a design organization acceptable to CAA, provided
    - (i) The design organisation furnishes a handbook to the CAA describing, directly or by cross-reference, the organisation, the relevant procedures and the products or changes to products to be designed.
    - (ii) The handbook is amended as necessary to remain an up-to-date description of the organisation, and copies of amendments shall be supplied to the CAA.

### **GM 21.A.435(a) Classification of repairs**

- 1. Clarification of the terms Major/Minor

In line with the definitions given in MCAR-21.A.91, a new repair is classified as 'major' if the result on the approved type design has an appreciable effect on structural performance, weight, balance, systems, operational characteristics or other characteristics affecting the airworthiness of the product, part or appliance. In particular, a repair is classified as major if it needs extensive static, fatigue and damage tolerance strength justification and/or testing in its own right, or if it needs methods, techniques or practices that are unusual (i.e., unusual material selection, heat treatment, material processes, jigging diagrams, etc.)

Repairs that require a re-assessment and re-evaluation of the original certification substantiation data to ensure that the aircraft still complies with all the relevant requirements, are to be considered as major repairs.

Repairs whose effects are considered minor and require minimal or no assessment of the original certification substantiation data to ensure that the aircraft still complies with all the relevant requirements, are to be considered "minor".

It is understood that not all the certification substantiation data will be available to those persons/organisations classifying repairs. A qualitative judgement of the effects of the repair will therefore be acceptable for the initial classification. The subsequent review of the design of the repair may lead to it being re-classified, owing to early judgements being no longer valid.

- 2. Airworthiness concerns for Major/Minor classification

The following should be considered for the significance of their effect when classifying repairs. Should the effect be considered to be significant then the repair should be classified 'Major'. The repair may be classified as 'Minor' where the effect is known to be without appreciable consequence.

i. Structural performance

Structural performance of the product includes static strength, fatigue, damage tolerance, flutter and stiffness characteristics. Repairs to any element of the structure should be assessed for their effect upon the structural performance.

ii. Weight and balance

The weight of the repair may have a greater effect upon smaller aircraft as opposed to larger aircraft. The effects to be considered are related to overall aircraft centre of gravity and aircraft load distribution. Control surfaces are particularly sensitive to the changes due to the effect upon the stiffness, mass distribution and surface profile which may have an effect upon flutter characteristics and controllability.

iii. Systems

Repairs to any elements of a system should be assessed for the effect intended on the operation of the complete system and for the effect on system redundancy. The consequence of a structural repair on an adjacent or remote system should also be considered as above, (for example: airframe repair in area of a static port).

iv. Operational characteristics. Changes may include:

- stall characteristics
- handling
- performance and drag
- vibration

v. Other characteristics

- changes to load path and load sharing
- change to noise and emissions
- fire protection / resistance

Note: Considerations for classifying repairs 'Major/Minor' should not be limited to those listed above.

### 3. Examples of 'Major' repairs

- i. A repair that requires a permanent additional inspection to the approved maintenance programme, necessary to ensure the continued airworthiness of the product. Temporary repairs for which specific inspections are required prior to installation of a permanent repair do not necessarily need to be classified as 'Major'. Also, inspections and changes to inspection frequencies not required as part of the approval to ensure continued airworthiness do not cause classification as 'Major' of the associated repair.
- ii. A repair to life limited or critical parts.
- iii. A repair that introduces a change to the Aircraft Flight Manual.

### **GM 21.A.435(b) Classification of repairs**

An owner/operator may get their repair classified and approved by the TC/STC holder even though the TC/STC holder has not submitted the handbook to the CAA.

The requirement to submit a handbook to CAA is for design organisations other than TC/STC holder.

### **MCAR-21.A.437 Issue of a repair design approval**

When it has been declared and has been shown that the repair design meets the applicable certification specifications and environmental protection requirements of MCAR-21.A.433(a)(1), it shall be approved:

- (a) by the CAA, or
- (b) by a design organisation accepted by CAA, that is also the type-certificate or the supplemental type-certificate or APU TSO authorisation holder.
- (c) For minor repairs only, by a design organization acceptable to CAA, provided
  1. The design organisation furnishes a handbook to the CAA describing, directly or by cross-reference, the organisation, the relevant procedures and the products or changes to products to be designed.
  2. The handbook is amended as necessary to remain an up-to-date description of the organisation, and copies of amendments shall be supplied to the CAA.

### **GM 21.A.437 Issue of repair design approval**

1. Approval by DOA holder

The DOA may approve repairs through the use of procedures in the handbook without requiring CAA involvement. However, the owner or operator shall provide the CAA:

- (i) Notification before incorporation of modification by sending all the documents relevant to the modification
- (ii) Any instructions for continued airworthiness issued by the design organization

2. Previously approved data for other applications

When it is intended to use previously approved data for other applications, it is expected that applicability and effectiveness would be checked with an appropriately approved design organisation. After damage identification, if a repair solution exists in the available approved data, and if the application of this solution to the identified damage remains justified by the previous approved repair design, (structural justifications still valid, possible airworthiness limitations unchanged), the solution can be considered approved and can be used again.

3. Temporary repairs.

These are repairs that are life limited, to be removed and replaced by a permanent repair after a limited service period. These repairs should be classified under MCAR-21.A.435 and the service period defined at the approval of the repair.

4. Fatigue and damage tolerance.

When the repaired product is released into service before the fatigue and damage tolerance evaluation has been completed, the release should be for a limited service period, defined at the issue of the repair.

### **MCAR-21.A.439 Production of Repair Parts**

Parts and appliances to be used for the repair shall be manufactured in accordance with production data based upon all the necessary design data as provided by the repair design approval holder:

- (a) (reserved)
- (b) by an organisation appropriately approved in accordance with EASA Part-21 Subpart G; or
- (c) by an appropriately approved maintenance organisation; or
- (d) by an organisation appropriately approved in accordance with Part 21 Subpart G of Title 14 Code of Federal Regulations of the United States of America; or
- (e) by an organisation appropriately approved in accordance with Part V Subpart 61 of the Canadian Aviation Regulations.

### **GM 21.A.439 Production of Repair Parts**

A maintenance organisation may manufacture parts for its own repair purposes when expressly authorised by the CAA.

### **MCAR-21.A.441 Repair embodiment**

- (a) The embodiment of a repair shall be made in accordance with MCAR-M or MCAR-145 as appropriate, or by a production organisation accepted by CAA.
- (b) The design organisation shall transmit to the organisation performing the repair all the necessary installation instructions.

### **MCAR-21.A.443 Limitations**

A repair design may be approved subject to limitations, in which case the repair design approval shall include all necessary instructions and limitations. These instructions and limitations shall be held by the operator.

### **GM 21.A.443 Limitations**

Instructions and limitations associated with repairs should be specified and controlled by those procedures required by the applicable operations rules.

### **MCAR-21.A.445 Unrepaired damage**

(a) When a damaged product, part or appliance, is left unrepaired, and is not covered by previously approved data, the evaluation of the damage for its airworthiness consequences may only be made;

1. by the CAA, or
2. by a design organisation accepted by CAA, provided
  - (i) The design organisation furnishes a handbook to the CAA describing, directly or by cross-reference, the organisation, the relevant procedures and the products or changes to products to be designed.
  - (ii) The handbook is amended as necessary to remain an up-to-date description of the organisation, and copies of amendments shall be supplied to the CAA.

Any necessary limitations shall be processed in accordance with the procedures of MCAR-21.A.443.

(b) Where the organisation evaluating the damage under paragraph (a) is neither the CAA nor the type-certificate, supplemental type-certificate or APU TSO authorisation holder, this organisation shall justify that the information on which the evaluation is based is adequate either from its organisation's own resources or through an arrangement with the type-certificate, supplemental type-certificate or APU TSO authorisation holder, or manufacturer, as applicable.

### **GM 21.A.445 Unrepaired damage**

This is not intended to supersede the normal maintenance practices defined by the type certificate holder, (e.g., blending out corrosion and re-protection, stop drilling cracks, etc.), but addresses specific cases not covered in the manufacturer's documentation.

#### **GM 21.A.445(a) Unrepaired damage**

An owner/operator may get their unrepaired damage evaluated for its airworthiness consequences by the TC/STC holder even though the TC/STC holder has not submitted the handbook to the CAA.

The requirement to submit a handbook to CAA is for design organisations other than TC/STC holder.

**MCAR-21.A.447 Record keeping**

For each repair, all relevant design information, drawings, test reports, instructions and limitations possibly issued in accordance with MCAR-21.A.443, justification for classification and evidence of the design approval, shall:

- (a) be held by the repair design approval holder accepted by CAA, at the disposal of the CAA, and
- (b) be retained by the repair design approval holder accepted by CAA in order to provide the information necessary to ensure the continued airworthiness of the repaired products, parts or appliances.

**AMC 21.A.447 Record Keeping**

(Refer to AMC 21.A.433(a))



**MCAR-21.A.449 Instructions for continued airworthiness**

- (a) The holder of the repair design approval accepted by CAA shall furnish at least one complete set of those changes to the instructions for continued airworthiness which result from the design of the repair, comprising descriptive data and accomplishment instructions prepared in accordance with the applicable requirements, to each operator of aircraft incorporating the repair. The repaired product, part or appliance may be released into service before the changes to those instructions have been completed, but this shall be for a limited service period, and in agreement with CAA. Those changes to the instructions shall be made available on request to any other person required to comply with any of the terms of those changes to the instructions. The availability of some manual or portion of the changes to the instructions for continued airworthiness, dealing with overhaul or other forms of heavy maintenance, may be delayed until after the product has entered into service, but shall be available before any of the products reaches the relevant age or flight — hours/cycles.
- (b) If updates to those changes to the instructions for continued airworthiness are issued by the holder of the repair design approval accepted by CAA after the repair has been first approved, these updates shall be furnished to each operator and shall be made available on request to any other person required to comply with any of the terms of those changes to the instructions. The operator shall provide these updates to CAA.

**(MCAR-21.A.451 Reserved)**

**(Subpart N — RESERVED)**

## **Subpart O — TECHNICAL STANDARD ORDER AUTHORISATIONS**

### **MCAR-21.A.601                      Scope**

- (a) The CAA does not issue technical standard order (TSO) authorisations.
- (b) This Subpart describes the requirements for the acceptance of TSO authorisations.

### **MCAR-21.A.601B                      Acceptability of foreign TSO authorisations**

The following foreign TSO authorisations may be accepted by the CAA:

- (a) a TSO authorisation issued by EASA
- (b) a TSO authorisation accepted by EASA
- (c) a TSO authorisation issued by an ICAO Contracting State in compliance with Annexes 8 and 16 to the Convention on International Civil Aviation.

## **Subpart P — PERMIT TO FLY**

### **MCAR-21.A.701 Scope**

- (a) Permits to fly shall be issued in accordance with this Subpart to aircraft that do not meet, or have not been shown to meet, applicable airworthiness requirements but are capable of safe flight under defined conditions and for the following purposes:
1. development;
  2. showing compliance with regulations or certification specifications;
  3. design organisations or production organisations crew training;
  4. production flight testing of new production aircraft;
  5. flying aircraft under production between production facilities;
  6. flying the aircraft for customer acceptance;
  7. delivering or exporting the aircraft;
  8. flying the aircraft for CAA acceptance;
  9. market survey, including customer's crew training;
  10. exhibition and air show;
  11. flying the aircraft to a location where maintenance or airworthiness review are to be performed, or to a place of storage;
  12. flying an aircraft at a weight in excess of its maximum certificated takeoff weight for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available;
  13. record breaking, air racing or similar competition;
  14. flying aircraft meeting the applicable airworthiness requirements before conformity to the environmental requirements has been found;
  15. for non-commercial flying activity on individual non-complex aircraft or types for which a certificate of airworthiness is not appropriate.
- (b) This subpart establishes the procedure for issuing permits to fly and approving associated flight conditions, and establishes the rights and obligations of the applicants for, and holders of, those permits to fly and approvals of flight conditions.

### GM Subpart P Permit to Fly

The process allowing a flight under a permit to fly can be described as follows:

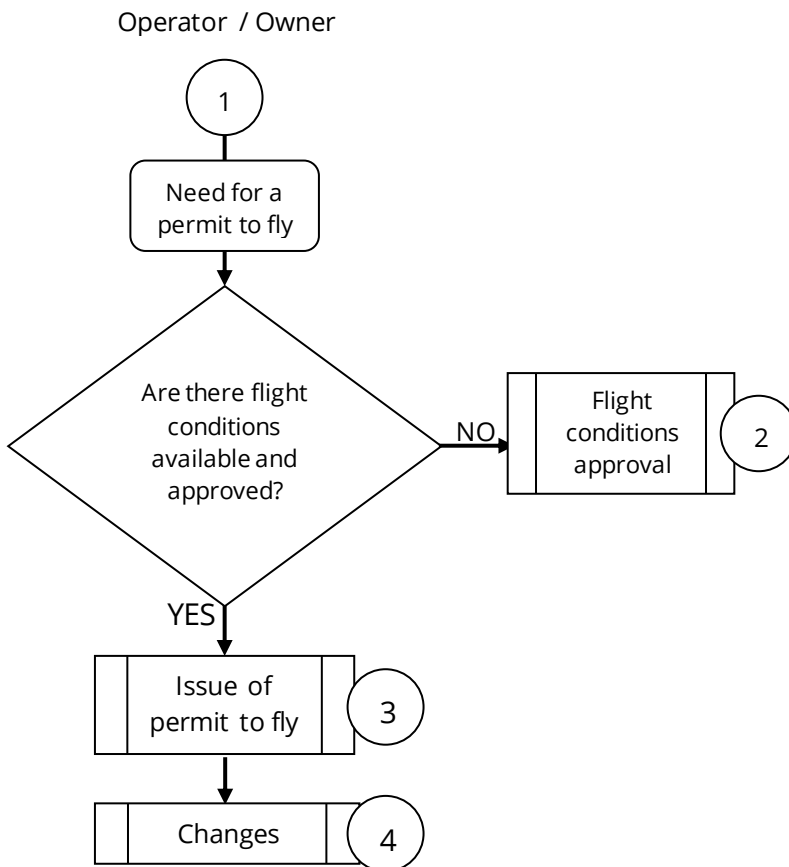
Flowchart 1 – Overview

Flowchart 2 – Approval of flight conditions

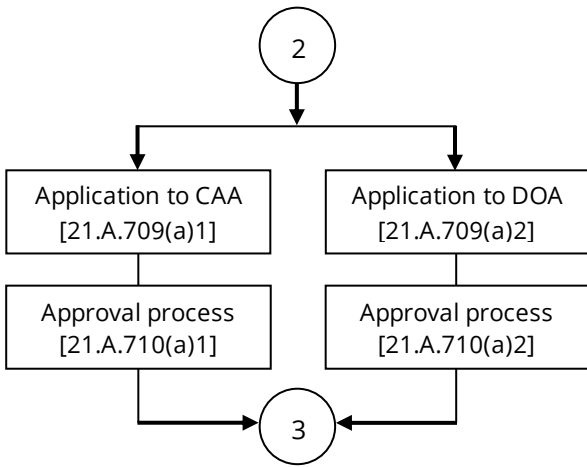
Flowchart 3 – Issue of permit to fly

Flowchart 4 – Changes after the first issue of permit to fly

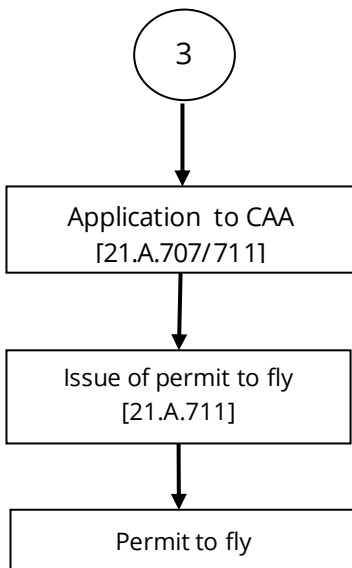
#### Flowchart 1 to GM Subpart P – Overview



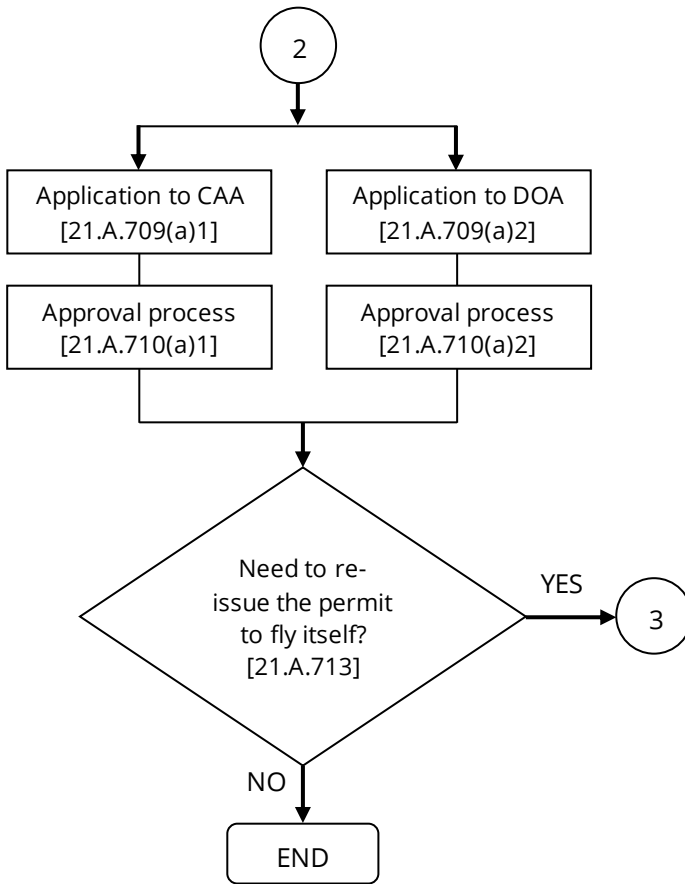
**Flowchart 2 to GM Subpart P – Approval of flight conditions**



**Flowchart 3 to GM Subpart P – Issue of permit to fly**



**Flowchart 4 to GM Subpart P – Changes after the first issue of permit to fly**



## **GM 21.A.701(a) Permit to fly when certificate of airworthiness is not appropriate**

A certificate of airworthiness may not be appropriate for an individual aircraft or aircraft type when it is not practicable to comply with the normal continued airworthiness requirements and the aircraft is to a design standard that is demonstrated to be capable of safe flight under defined conditions.

MCAR-21.A.701 identifies cases where the issuance of a Certificate of Airworthiness may not be possible or appropriate and this GM provides further information and typical examples for clarification where appropriate:-

Note: This list of examples is not exhaustive

1. Development:
  - testing of new aircraft or modifications
  - testing of new concepts of airframe, engine propeller and equipment;
  - testing of new operating techniques;
2. Demonstration of compliance with regulations or certification specifications:
  - certification flight testing for type certification, supplemental type certificates, changes to type certificates or Technical Standard Order authorisation;
3. Design organisations or production organisations crew training:
  - Flights for training of crew that will perform design or production flight testing before the design approval or Certificate of Airworthiness can be issued.
4. Production flight testing of new production aircraft:
  - For establishing conformity with the approved design, typically this would be the same program for a number of similar aircraft;
5. Flying aircraft under production between production facilities:
  - green aircraft ferry for follow on final production.
6. Flying the aircraft for customer acceptance:
  - Before the aircraft is sold and/or registered.
7. Delivering or exporting the aircraft:
  - Before the aircraft is registered in the State where the Certificate of Airworthiness will be issued.
8. Flying the aircraft for Authority acceptance:
  - In the case of inspection flight test by the authority before the Certificate of Airworthiness is issued.
9. Market survey, including customer's crew training:



- Flights for the purpose of conducting market survey, sales demonstrations and customer crew training with non type-certificated aircraft or aircraft for which conformity has not yet been established or for non-registered a/c and before the Certificate of Airworthiness is issued
10. Exhibition and air show:
- Flying the aircraft to an exhibition or show and participating to the exhibition or show before the design approval is issued or before conformity with the approved design has been shown.
11. Flying the aircraft to a location where maintenance or airworthiness review are to be performed, or to a place of storage:
- Ferry flights in cases where maintenance is not performed in accordance with approved programmes, where an AD has not been complied with where certain equipment outside the Minimum Equipment List (MEL) is unserviceable or when the aircraft has sustained damage beyond the applicable limits.
12. Flying an aircraft at a weight in excess of its maximum certificated take-off weight for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available:
- Oversees ferry flights with additional fuel capacity.
13. Record breaking, air racing or similar competition:
- Training flight and positioning flight for this purpose are included
14. Flying aircraft meeting the applicable certification specifications before conformity to the environmental requirements has been found:
- Flying an aircraft which has been demonstrated to comply with all applicable certification specifications but not with environmental requirements.
15. For non-commercial flying activity on individual non-complex aircraft or types for which a certificate of airworthiness is not appropriate.
- For aircraft which cannot practically meet all applicable certification specifications, such as certain aircraft without TC-holder (“generically termed orphan aircraft”) or aircraft which have been under national systems of Permit to Fly and have not been demonstrated to meet all applicable requirements. The option of a permit to fly for such an aircraft should only be used if a certificate of airworthiness cannot be issued due to conditions which are outside the direct control of the aircraft owner, such as the absence of properly certified spare parts.

Note: The above listing is of cases when a permit to fly MAY be issued; it does not mean that in the described cases a permit to fly MUST be issued. If other legal means are available to allow the intended flight(s) they can also be used.

**MCAR-21.A.703 Eligibility**

- (a) Any natural or legal person shall be eligible as an applicant for a permit to fly except for a permit to fly requested for the purpose of point 21.A.701(a)(15) where the applicant shall be the owner.
- (b) A person eligible for an application for permit to fly, is also eligible for application for the approval of the flight conditions.

**(MCAR-21.A.705 Reserved)**

**MCAR-21.A.707 Application for permit to fly**

- (a) Pursuant to MCAR-21.A.703, an application for a permit to fly shall be made to the CAA in a form and manner established by the CAA.
- (b) Each application for a permit to fly shall include:
  - 1. the purpose(s) of the flight(s), in accordance with MCAR-21.A.701;
  - 2. the ways in which the aircraft does not comply with the applicable airworthiness requirements;
  - 3. the flight conditions approved in accordance with MCAR-21.A.710.
- (c) Where the flight conditions are not approved at the time of application for a permit to fly, an application for approval of the flight conditions shall be made in accordance with MCAR-21.A.709.

**GM 21.A.707(b) Application**

An application should be made on CAA Form 21.

## **MCAR-21.A.708 Flight conditions**

Flight conditions include:

- (a) the configuration(s) for which the permit to fly is requested;
- (b) any condition or restriction necessary for safe operation of the aircraft, including:
  - 1. the conditions or restrictions put on itineraries or airspace, or both, required for the flight(s);
  - 2. the conditions and restrictions put on the flight crew to fly the aircraft;
  - 3. the restrictions regarding carriage of persons other than flight crew;
  - 4. the operating limitations, specific procedures or technical conditions to be met;
  - 5. the specific flight test programme (if applicable);
  - 6. the specific continuing airworthiness arrangements including maintenance instructions and regime under which they will be performed;
- (c) the substantiation that the aircraft is capable of safe flight under the conditions or restrictions of subparagraph (b);
- (d) the method used for the control of the aircraft configuration, in order to remain within the established conditions.

### **GM 21.A.708(b)6 Continuing airworthiness**

In most cases a simple reference to existing maintenance requirements will suffice for aircraft that have a temporarily invalid Certificate of Airworthiness.

For other aircraft it will have to be proposed by the applicant as part of the flight conditions. For approved organisations they can be included in their procedures.

### **GM No. 1 to 21.A.708(c) Safe flight**

Safe flight normally means continued safe flight and landing but in some limited cases (e.g. higher risk flight testing) it can mean that the aircraft is able to fly in a manner that will primarily ensure the safety of overflown third parties, the flight crew and, if applicable other occupants.

This definition of 'safe flight' should not be interpreted as allowing a test pilot, equipped with a parachute and operating over a sparsely populated area, to set out on a test flight in the full knowledge that there is a high probability of losing the aircraft. The applicant should take reasonable care to minimise safety risks and to be satisfied that there is a reasonable probability that the aircraft will carry out the flight without damage or injury to the aircraft and its occupants or to other property or persons whether in the air or on the ground.

### **GM No. 2 to 21.A.708(c) Substantiations**

The substantiations should include analysis, calculations, tests or other means used to determine under which conditions or restrictions the aircraft can perform safely a flight.

### **GM No. 3 to 21.A.708(c) Operation of Overweight Aircraft**

This GM provides information and guidance with respect to permit to fly for operating an aircraft in excess of its maximum certificated take-off weight, for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available.

#### 1. GENERAL.

The excess weight that may be authorized for overweight operations should be limited to additional fuel, fuel carrying facilities, and navigational equipment necessary for the flight.

It is recommended that the applicant discuss the proposed flight with the TC holder of the aircraft to determine the availability of technical data on the installation of additional fuel carrying facilities and/or navigational equipment.

#### 2. CRITERIA USED TO DETERMINE THE SAFETY OF ADDITIONAL FACILITIES.

In evaluating the installation of additional facilities, the CAA or the design organisation must find that the changed aircraft is safe for operation. To assist in arriving at such a determination, the following questions are normally considered:

- a. Does the technical data include installation drawings, structural substantiating reports, weight, balance, new centre of gravity limits computations, and aircraft performance limitations in sufficient detail to allow a conformity inspection of the aircraft to be made?
- b. In what ways does the aircraft not comply with the applicable certification specifications?
- c. Are the fuel tanks vented to the outside? Are all areas in which tanks are located ventilated to reduce fire, explosion, and toxicity hazards?
- d. Are the tanks even when empty strong enough to withstand the differential pressure at maximum operating altitude for a pressurized aircraft?
- e. Have means been provided for determining the fuel quantity in each tank prior to flight?
- f. Are shutoff valves, accessible to the pilot, provided for each additional tank to disconnect these tanks from the main fuel system?

- g. Are the additional fuel tank filler connections designed to prevent spillage within the aircraft during servicing?
- h. Is the engine oil supply and cooling adequate for the extended weight and range?

### 3. LIMITATIONS.

The following types of limitations may be necessary for safe operation of the aircraft:

- a. Revised operational airspeeds for use in the overweight condition.
- b. Increased pilot skill requirements.
- c. A prescribed sequence for using fuel from various tanks as necessary to keep the aircraft within its centre of gravity range.
- d. Notification to the control tower of the overweight take-off condition to permit use of a runway to minimize flight over congested areas.
- e. Avoidance of severe turbulence. If encountered, the aircraft should be inspected for damage as soon as possible.

### 4. EXAMPLE OF OPERATING LIMITATIONS WHICH MAY BE PRESCRIBED AS PART OF THE PERMIT TO FLY.

Aircraft type: XXXX Model: YYYY

Limitations:

- a. Maximum weight must not exceed 8,150 pounds.
- b. Maximum quantity of fuel carried in auxiliary tanks must not exceed 106 gallons in fwd tank, 164 gallons in centre tank, and 45 gallons in aft tank.
- c. Centre of gravity limits must not exceed (fwd) +116.8 and (aft) +124.6.
- d. Aerobatics are prohibited.
- e. Use of autopilot while in overweight condition is prohibited.
- f. Weather conditions with moderate to severe turbulence should be avoided.
- g. When an overweight landing is made or the aircraft has been flown through moderate or severe turbulence while in an overweight condition, the aircraft must be inspected for damage after landing. The inspections performed and the findings

must be entered in the aircraft log. The pilot must determine, before the next take-off, that the aircraft is airworthy.

- h. When operated in the overweight condition, the cruising speed ( $V_c$ ) shall not exceed 185 m.p.h. and the maximum speed ( $V_{ne}$ ) shall not exceed 205 m.p.h.
- i. Operation in the overweight condition must be conducted to avoid areas having heavy air traffic, to avoid cities, towns, villages, and congested areas, or any other areas where such flights might create hazardous exposure to person or property on the ground.

**GM 21.A.708(d) Control of aircraft configuration**

The applicant should establish a method for the control of any change or repair made to the aircraft, for changes and repairs that do not invalidate the conditions established for the permit to fly.

All other changes should be approved in accordance with MCAR 21.A.713 and when necessary a new permit to fly should be issued in accordance with MCAR 21.A.711.

**MCAR-21.A.709 Application for approval of flight conditions**

(a) Pursuant to MCAR-21.A.707(c), an application for approval of the flight conditions shall be made to:

1. CAA in a form and manner established by the CAA; or
2. an appropriately approved design organisation accepted by the CAA, under subpart J

(b) Each application for approval of the flight conditions shall include:

1. the proposed flight conditions;
2. the documentation supporting these conditions; and
3. a declaration that the aircraft is capable of safe flight under the conditions or restrictions of paragraph MCAR-21.A.708(b).

**AMC 21.A.709(b) Submission of documentation supporting the establishment of flight conditions**

Together with the application, the documentation required by MCAR 21.A.709(b) must be submitted with the approval form (CAA Form 18B), completed with all relevant information. If the complete set of data is not available at the time of application, the missing elements can be provided later. In such cases, the approval form must be provided only when all data are available, to allow the applicant to make the statement required in box 9 of the form.

When the flight conditions are approved under a privilege, this form should be used by the approved organisation to document the approval.

**MCAR-21.A.710 Approval of flight conditions**

(a) Flight conditions shall be approved by:

1. the CAA ; or
2. an appropriately approved design organisation accepted by CAA, under subpart J.

(b) Reserved

(c) Before approving the flight conditions, CAA or the approved organisation must be satisfied that the aircraft is capable of safe flight under the specified conditions and restrictions. CAA may make or require the applicant to make any necessary inspections or tests for that purpose.



### **MCAR-21.A.711 Issue of a permit to fly**

- (a) The CAA may issue a permit to fly:
1. Upon presentation of the data required by MCAR-21.A.707; and
  2. When the conditions of MCAR-21.A.708 have been approved in accordance with MCAR-21.A.710; and
  3. When the CAA, through its own investigations, which may include inspections, or through procedures agreed with the applicant, is satisfied that the aircraft conforms to the design defined under MCAR-21.A.708 before flight.
- (b) Reserved
- (c) Reserved
- (d) An appropriately approved continuing airworthiness management organisation may issue a permit to fly (Form 20b) under privileges granted under point MCAR-M.A.711, when the flight conditions referred to in 21.A.708 have been approved in accordance with 21.A.710.
- (e) The permit to fly shall specify the purpose(s) and any conditions and restrictions approved under MCAR-21.A.710.
- (f) For permits issued under (d), a copy of the permit to fly and associated flight conditions shall be submitted to the CAA at the earliest opportunity but not later than 3 days.
- (g) Upon evidence that any of the conditions specified in point 21.A.723(a) are not met for a permit to fly that an organisation has issued pursuant to point (d), that organisation shall immediately revoke that permit to fly and inform without delay the CAA.

### **GM 21.A.711(e) Additional conditions and restrictions**

The conditions and restrictions prescribed by the CAA may include airspace restrictions to make the conditions approved under MCAR 21.A.710 more concrete, or conditions outside the scope of the ones mentioned in MCAR 21.A.708(b) such as a radio station license.

### **MCAR-21.A.713 Changes**

- (a) Any change that invalidates the flight conditions or associated substantiation established for the permit to fly shall be approved in accordance with MCAR-21.A.710. When relevant an application shall be made in accordance with MCAR-21.A.709.
- (b) A change affecting the content of the permit to fly requires the issuance of a new permit to fly in accordance with MCAR-21.A.711.

### **GM 21.A.713 Changes**

Changes to the conditions or associated substantiations that are approved but do not affect the text on the permit to fly do not require issuance of a new permit to fly.

In case a new application is necessary, the substantiation for approval of the flight conditions only needs to address the change.

**MCAR-21.A.715      Language**

The manuals, placards, listings, and instrument markings and other necessary information required by applicable certification specifications shall be presented in English and where applicable in Dhivehi.

**MCAR-21.A.719      Transferability**

(a) A permit to fly is not transferable.

(b) Reserved

**MCAR-21.A.721      Inspections**

The holder of, or the applicant for, a permit to fly shall provide access to the aircraft concerned at the request of the CAA.

**MCAR-21.A.723      Duration and continued validity**

- (a) A permit to fly shall be issued for a maximum of 12 months and shall remain valid subject to:
1. compliance with the conditions and restrictions of MCAR-21.A.711(e) associated with the permit to fly;
  2. the permit to fly not being surrendered or revoked by the CAA;
  3. the aircraft remaining on Maldivian civil aircraft register.
- (b) Notwithstanding subparagraph (a), a permit to fly issued for the purpose of MCAR-21.A.701(15) may be issued for unlimited duration.
- (c) Upon surrender or revocation, the permit to fly shall be returned to the CAA.

**MCAR-21.A.725      Renewal of permit to fly**

Renewal of the permit to fly shall be processed as a change in accordance with MCAR-21.A.713.

**MCAR-21.A.727      Obligations of the holder of a permit to fly**

The holder of a permit to fly shall ensure that all the conditions and restrictions associated with the permit to fly are satisfied and maintained.

**MCAR-21.A.729      Recordkeeping**

- (a) All documents produced to establish and justify the flight conditions shall be held by the holder of the approval of the flight conditions at the disposal of the CAA and shall be retained in order to provide the information necessary to ensure the continued airworthiness of the aircraft.
  
- (b) All documents associated with the issue of permits to fly under the privilege of approved organisations, including inspection records, documents supporting the approval of flight conditions and the permit to fly itself, shall be held by the related approved organisation at the disposal of the CAA and shall be retained in order to provide the information necessary to ensure the continued airworthiness of the aircraft.

## **Subpart Q — IDENTIFICATION OF PRODUCTS, PARTS AND APPLIANCES**

### **MCAR-21.A.801 Identification of products**

- (a) The identification of products shall include the following information:
1. Manufacturer's name.
  2. Product designation.
  3. Manufacturer's Serial number.
  4. Any other information the CAA finds appropriate.
- (b) An aircraft or engine shall be identified by means of a fireproof plate that has the information specified in paragraph (a) marked on it by etching, stamping, engraving, or other approved method of fireproof marking. The identification plate shall be secured in such a manner that it is accessible and legible, and will not likely be defaced or removed during normal service, or lost or destroyed in an accident.
- (c) A propeller, propeller blade, or propeller hub shall be identified by means of a plate, stamping, engraving, etching or other approved method of fireproof identification that is placed on it on a non-critical surface, contains the information specified in paragraph (a), and will not likely be defaced or removed during normal service or lost or destroyed in an accident.
- (d) For manned free balloons, the identification plate prescribed in paragraph (b) shall be secured to the balloon envelope and shall be located, if practicable, where it is legible to the operator when the balloon is inflated. In addition, the basket, load frame assembly and any heater assembly shall be permanently and legibly marked with the manufacturer's name, part number, or equivalent, and serial number, or equivalent.

**MCAR-21.A.803 Handling of identification data**

- (a) No person shall remove, change, or place identification information referred to in MCAR-21.A.801(a) on any aircraft, engine, propeller, propeller blade, or propeller hub, or in MCAR-21.A.807(a) on an APU, without the approval of the CAA.
- (b) No person shall remove or install any identification plate referred to in MCAR-21.A.801 or in MCAR-21.A.807 for an APU, without the approval of the CAA.
- (c) By way of derogation from paragraphs (a) and (b), any natural or legal person performing maintenance work under the applicable Maldivian Civil Aviation Regulations may, in accordance with methods, techniques and practices established by the CAA:
  - 1. Remove, change, or place the identification information referred to in MCAR-21.A.801(a) on any aircraft, engine, propeller, propeller blade, or propeller hub, or in MCAR-21.A.807(a) on an APU; or
  - 2. Remove an identification plate referred to in MCAR-21.A.801, or MCAR-21.A.807 for an APU, when necessary during maintenance operations.
- (d) No person shall install an identification plate removed in accordance with subparagraph (c) (2) on any aircraft, engine, propeller, propeller blade, or propeller hub other than the one from which it was removed.

### **MCAR-21.A.804 Identification of parts and appliances**

(a) Each part or appliance shall be permanently and legibly marked with:

1. a name, trademark, or symbol identifying the manufacturer in a manner identified by the applicable design data; and
2. the part number, as defined in the applicable design data; and
3. the letters EPA (European Part Approval)/PMA (Parts Manufacturer Approval) or equivalent for parts or appliances produced in accordance with approved design data not belonging to the type-certificate holder of the related product, except for TSO articles.

(b) By way of derogation from paragraph (a), if the CAA agrees that a part or appliance is too small or that it is otherwise impractical to mark a part or appliance with any of the information required by paragraph (a), the authorised release document accompanying the part or appliance or its container shall include the information that could not be marked on the part.

### **MCAR-21.A.805 Identification of critical parts**

In addition to the requirement of MCAR-21.A.804, a part to be fitted on a type-certificated product which has been identified as a critical part shall be permanently and legibly marked with a part number and a serial number.



**MCAR-21.A.807 Identification of TSO articles**

- (a) Each TSO article shall be permanently and legibly marked with the following information:
1. The name and address of the manufacturer;
  2. The name, type, part number or model designation of the article;
  3. The serial number or the date of manufacture of the article or both; and
  4. The applicable TSO number.
- (b) By way of derogation from paragraph (a), if the CAA agrees that a part is too small or that it is otherwise impractical to mark a part with any of the information required by paragraph (a), the authorised release document accompanying the part or its container shall include the information that could not be marked on the part.
- (c) An APU shall be identified by means of a fireproof plate that has the information specified in paragraph (a) marked on it by etching, stamping, engraving, or other approved method of fireproof marking. The identification plate shall be secured in such a manner that it is accessible and legible, and will not likely be defaced or removed during normal service, or lost or destroyed in an accident.

## **Section B — PROCEDURE FOR CIVIL AVIATION AUTHORITY**

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## **APPENDICES TO THE REGULATIONS**

**Appendix 1 (Reserved)**

**Appendix II Airworthiness Review Certificate (CAA Form 15a)**

(Refer to MCAR-M)

## Appendix III Permit to Fly (CAA Form 20a)

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ



MALDIVES CIVIL AVIATION AUTHORITY  
REPUBLIC OF MALDIVES

Permit No  
21P/YYYY/XXX

### PERMIT TO FLY

This permit to fly is issued pursuant to Civil Aviation Regulations in force and certifies that the aircraft is capable of safe flight for the purpose and within the conditions listed below and is valid within Maldives

This permit is also valid for flight to and within other states provided separate approval is obtained from the competent authorities of such States:

1. Nationality & Registration Marks:	
2. Aircraft Manufacturer/type:	
3. Serial No:	

4. The permit covers: *[purpose in accordance with MCAR-21.A.701(a)]*

5. Holder: *[in case of a permit to fly issued for the purpose of MCAR-21.A.701(a)(15) this should state: 'the registered owner']*

6. Conditions/remarks:

7. Validity period:

8. Place and date of issue:

9. Signature of CAA representative:

CAA Form 20a, Issue 3, 30 Oct 2019

## Appendix IV Permit to Fly Issued by Approved Organisations (CAA Form 20b)

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ



CIVIL AVIATION DEPARTMENT  
REPUBLIC OF MALDIVES

Permit No  
21P/ORG/YYYY/XXX

### PERMIT TO FLY

This permit to fly is issued pursuant to Civil Aviation Regulations in force and certifies that the aircraft is capable of safe flight for the purpose and within the conditions listed below and is valid within Maldives

This permit is also valid for flight to and within other states provided separate approval is obtained from the Competent Authorities of such States:

Name & Address of the Organisation Issuing the Permit to Fly	
1. Nationality & Registration Marks:	
2. Aircraft Manufacturer/type:	
3. Serial No:	
4. The permit covers: <i>[purpose in accordance with MCAR-21.A.701(a)]</i>	
5. Holder: <i>[Organisation issuing the permit to fly]</i>	
6. Conditions/remarks:	
7. Validity period:	
8. Place and date of issue	9. Authorised Signature:  Name:  Approval Reference No:

CAA Form 20b, Issue 1, 30 Oct 2019

## Appendix V (Reserved)

## Appendix VI Certificate of Airworthiness (CAA Form 25)



MALDIVES CIVIL AVIATION AUTHORITY  
REPUBLIC OF MALDIVES

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Certificate No  
MV-21H-XXXX

### CERTIFICATE OF AIRWORTHINESS

1. Nationality and Registration Marks	2. Manufacturer and Manufacturer's Designation of Aircraft	3. Aircraft Serial Number
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4. Categories
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<p>5. This certificate of Airworthiness is issued pursuant to the Convention on International Civil Aviation dated 07 December 1944 and in accordance with the Civil Aviation Regulations, in respect of the above-mentioned aircraft which is considered to be airworthy when maintained and operated in accordance with the forgoing and the pertinent operating limitations.</p> <p>Date of issue:</p> <p>Signature:</p>
---

<p>6. This Certificate of Airworthiness is valid unless revoked by the Civil Aviation Authority. A current Airworthiness Review Certificate shall be attached to this Certificate.</p>
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CAA Form 25 (01 June 2013)



**Appendix VII Noise Certificate (CAA Form 45)**

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ



MALDIVES CIVIL AVIATION AUTHORITY  
REPUBLIC OF MALDIVES

Document No  
MV-21H-XXXX

NOISE CERTIFICATE

4. Registration Marks	5. Manufacturer and Manufacturer's Designation of Aircraft	6. Aircraft Serial Number
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7. Engine:	8. Propeller: (*)
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9. Maximum take-off mass (kg)	10. Maximum landing mass (kg)(*)	11. Noise certification standard:
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12. Additional modifications incorporated for the purpose of compliance with the applicable noise certification standards:
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13. Lateral / full-power noise level: (*)	14. Approach noise level (*)	15. Flyover noise level (*)	16. Overflight noise level (*)	17. Take-off noise level (*)
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Remarks
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18. This Noise Certificate is issued pursuant to Annex 16, Volume 1 to the Convention on International Civil Aviation dated 7 December 1944 and Civil Aviation Regulations in force in respect of the above mentioned aircraft, which is considered to comply with the indicated noise standard when maintained and operated in accordance with the relevant requirements and operating limitations.
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19. Date of issue:	20. Signature
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CAA Form 45 (Issue 2, 18 January 2012)

(\*) These boxes may be omitted depending on noise certification standard.

## **APPENDICES TO THE AMC**

## **Appendix A to GM 21.A.91      Examples of Major Changes per discipline**

The information below is intended to provide a few major change examples per discipline, resulting from application of MCAR-21.A.91 and paragraph 3.3 conditions. It is not intended to present a comprehensive list of all major changes. Examples are categorised per discipline and are applicable to all products (aircraft, engines and propellers). However a particular change may involve more than one discipline, e.g., a change to engine controls may be covered in engines and systems (software).

Those involved with classification should always be aware of the interaction between disciplines and the consequences this will have when assessing the effects of a change (i.e., operations and structures, systems and structures, systems and systems, etc.; see example in paragraph 2 (ii).

Specific rules may exist which override the guidance of these examples.

In the MCAR-21 a negative definition is given of minor changes only. However in the following list of examples it was preferred to give examples of major changes.

Where in this list of examples the words 'has effect' or 'affect(s)' are used, they have always to be understood as being the opposite of 'no appreciable effect' as in the definition of minor change in MCAR-21.A.91. Strictly speaking the words 'has appreciable effect' and 'appreciably affect(s)' should have been used, but this has not been done to improve readability.

### **1. Structure**

- i. changes such as a cargo door cut-out, fuselage plugs, change of dihedral, addition of floats;
- ii. changes to materials, processes or methods of manufacture of primary structural elements, such as spars, frames and critical parts;
- iii. changes that adversely affect fatigue or damage tolerance or life limit characteristics;
- iv. changes that adversely affect aeroelastic characteristics.

### **2. Cabin Safety**

- i. changes which introduce a new cabin layout of sufficient change to require a re-assessment of emergency evacuation capability or which adversely affect other aspects of passenger or crew safety.

Items to consider include, but are not limited to:

- changes to or introduction of dynamically tested seats.
- change to the pitch between seat rows.
- change of distance between seat and adjacent obstacle like a divider.
- changes to cabin lay outs that affect evacuation path or access to exits.
- installation of new galleys, toilets, wardrobes, etc.
- installation of new type of electrically powered galley insert.

- ii. changes to the pressurisation control system which adversely affect previously approved limitations.

### 3. Flight

- i. Changes which adversely affect the approved performance, such as high altitude operation, brake changes that affect braking performance.
- ii. Changes which adversely affect the flight envelope.
- iii. Changes which adversely affect the handling qualities of the product including changes to the flight controls function (gains adjustments, functional modification to software) or changes to the flight protection or warning system.

### 4. Systems

For systems assessed under CS 25.1309 or equivalent, the classification process is based on the functional aspects of the change and its potential effects on safety.

- i. Where failure effect is 'Catastrophic' or 'Hazardous', the change should be classified as major.
- ii. Where failure effect is 'major', the change should be classified as major if:
  - aspects of the compliance demonstration use means that have not been previously accepted for the nature of the change to the system; or
  - the change affects the pilot/system interface (displays, controls, approved procedures); or
  - the change introduces new types of functions/systems such as GPS primary, TCAS, Predictive windshear, HUD.

The assessment of the criteria for software changes to systems also needs to be performed.

When software is involved, account should be taken also of the following guidelines:

Where a change is made to software produced in accordance with the guidelines of the latest edition of EASA AMC 20-115 (see EASA AMC-20 document) or equivalent, the change should be classified as major if either of the following apply, and the failure effect is Catastrophic, Hazardous or Major:

- i. the executable code for software, determined to be Level A or Level B in accordance with the guidelines, is changed unless that change involves only a variation of a parameter value within a range already verified for the previous certification standard; or
- ii. the software is upgraded to or downgraded from Level A, Level B or Level C; or
- iii. the executable code, determined to be level C, is deeply changed, e.g., after a software reengineering process accompanying a change of processor.

For software developed to guidelines other than the latest edition of EASA AMC 20-115 or equivalent, the applicant should assess changes in accordance with the foregoing principles.

For other codes the principles noted above may be used. However, due consideration should be given to specific certification specification/interpretations.

## 5. Propellers

Changes to:

- diameter
- airfoil
- planform
- material
- blade retention system, etc.

## 6. Engines

Changes:

- i. that adversely affect operating speeds, temperatures, and other limitations.
- ii. that affect or introduce parts identified by CS E-510 or equivalent where the failure effect has been shown to be hazardous.
- iii. that affect or introduce engine critical parts (CS E-515 or equivalent) or their life limits.
- iv. to a structural part which requires a re-substantiation of the fatigue and static load determination used during certification.
- v. to any part of the engine which adversely affects the existing containment capability of the structure.
- vi. that adversely affect the fuel, oil and air systems, which alter the method of operation, or require reinvestigation against the type-certification basis.
- vii. that introduce new materials or processes, particularly on critical components.

## 7. Rotors and drive systems

Changes that:

- i. adversely affect fatigue evaluation unless the service life or inspection interval are unchanged. This includes changes to materials, processes or methods of manufacture of parts, such as
  - rotor blades
  - rotor hubs including dampers and controls
  - gears
  - drive shafts
  - couplings
- ii. affect systems the failure of which may have hazardous or catastrophic effects. The design assessment will include:
  - cooling system
  - lubrication system
  - rotor controls
- iii. adversely affect the results of the rotor drive system endurance test, the rotor drive system being defined in CS 27/29.917 or equivalent.

- iv. adversely affect the results of the shafting critical speed analysis required by CS 27/29.931 or equivalent.

## 8. Environment

The introductory text to Appendix A to GM 21.A.91 describes how in MCAR-21 a negative definition is given of minor changes only. This philosophy is similar to the manner in which the ICAO Standards and Recommended Practices for environmental protection (ICAO Annex 16) and the associated Guidance Material (ICAO Environmental Technical Manual) define changes affecting a product's environmental characteristics in terms of 'no-acoustical changes' and 'no-emissions changes' (i.e. changes which do not appreciably affect the product's environmental characteristics).

Following the general philosophy of this Appendix, however, it is preferred to give examples of changes which might have an appreciable effect on a product's environmental characteristics (i.e. the effect might be greater than the no-acoustic change and no-emissions change criteria) and might therefore lead to a major change classification.

Where a change is made to an aircraft or aircraft engine, the effect of the change on the product's environmental characteristics should be taken into account. Examples of changes that might have an appreciable effect on the product's environmental characteristics, and might therefore be classified as a major change, are listed below. The examples are not exhaustive and will not, in every case, result in an appreciable change to the product's environmental characteristics, and therefore, will not per-se and in every case result in a major change classification.

An appreciable effect is considered to be one which exceeds the ICAO criteria for a no-acoustical change or a no-emissions change. For the definition of a no-acoustical change refer to the section of the ICAO Environmental Technical Manual, Volume I (ICAO Doc 9501, Volume I – Procedures for the Noise Certification of Aircraft) concerning changes to aircraft type designs involving no-acoustical changes (see also the definitions of a 'derived version' in ICAO Annex 16, Volume I). For the definition of a no-emissions change refer to the section of the ICAO Environmental Technical Manual, Volume II (ICAO Doc 9501, Volume II – Procedures for the Emissions Certification of Aircraft Engines) concerning no-emissions changes.

- i. Noise: A change that introduces either:
  - an increase in the noise certification level(s); or
  - a reduction in the noise certification level(s) for which the applicant wishes to take credit.

Examples of noise-related changes that might lead to a major change classification are:

- (1) For jet and heavy (maximum take-off mass greater than 8618 kg) propeller-driven aeroplanes:
  - A change that might affect the aircraft's take-off performance including:
    - o a change to the maximum take-off mass;
    - o a change to V<sub>2</sub> ('take-off safety speed'); or

- a change to the lift augmentation devices, including their configuration under normal take-off operating conditions.
- A change that might affect the aircraft's landing performance including:
  - a change to the maximum landing mass;
  - a change to VREF (reference landing speed); or
  - change to the lift augmentation devices, including their deployment under normal landing operating conditions.
- A change to the Centre of Gravity (CG) limits;
- A change that increases the aircraft's drag;
- A change that alters the external profile of the aircraft, including the installation or change of shape or size of any item on the external surface of the aircraft that might protrude into the airflow such as winglets and vortex generators; generally the installation of small antennas does not represent an acoustical change;
- A change that introduces an open-ended hollow cavity at more or less right angles to the airflow (e.g. hollow pins in undercarriage assemblies);
- A change of engine or, if fitted, propeller type;
- A change in engine thrust rating;
- A change to the engine rotating parts or stators, such as geometry, blade profile or blade number;
- A change to the aerodynamic flow lines through the engine;
- A change that affects the engine thermodynamic cycle, including a change to the engine's bypass ratio;
- A change to the engine nacelle, including a change to the acoustic liners;
- A change to the engine exhaust;
- A change to the engine bleed valves, including bleed valve scheduling;
- A change in the operation of engine power off-takes (e.g. the operation of the Environmental Control System (ECS) during a normal take-off or approach);
- A change to the Auxiliary Power Unit (APU), including associated operating limitations (e.g. a change that allows the APU to be operated during a normal approach when previously it was not allowed);

- A change to the propeller pitch and/or propeller speed during a normal take-off or approach;
  - A change that causes a change to the angle at which air flows into the propeller.
- (2) For light (maximum take-off mass 8 618 kg or less) propeller-driven aeroplanes:
- A change that might affect the aircraft's take-off performance including:
    - o a change to the maximum take-off mass;
    - o a change to the take-off distance;
    - o a change to the rate of climb; or
    - o a change to  $V_y$  (best rate of climb speed).
  - A change that increases the aircraft's drag (e.g. the installation of external cargo pods, external fuel tanks, larger tyres to a fixed undercarriage, floats etc.);
  - A change of engine or propeller type;
  - A change in take-off power including a change in engine speed (tachometer 'red line') or, for piston engines, a change to the manifold pressure limitations;
  - A change to the highest power in the normal operating range ('top of green arc');
  - In the case of an aircraft where take-off power/engine speed is time limited, a change in the period over which take-off power/engine speed may be applied;
  - A change to the engine inlet or exhaust including, if fitted, the inlet or exhaust muffler;
  - A change in propeller diameter, tip shape, blade thickness or the number of blades;
  - The installation of a variable or adjustable pitch propeller in place of a fixed pitch propeller and vice versa;
  - A change that causes a change to the angle at which air flows into the propeller.
- (3) For helicopters:
- A change that might affect the take-off and/or landing performance, including a change in take-off mass and  $V_Y$  (best rate of climb speed);
  - A change to  $V_{NE}$  (never-exceed airspeed) or to  $V_H$  (airspeed in level flight obtained using the torque corresponding to minimum engine installed, maximum continuous power available for sea level pressure, 25°C ambient conditions at the relevant maximum certificated mass);



- A change to the maximum take-off engine power or maximum continuous power;
- A change to the gearbox torque limits;
- A change of engine type;
- A change to the engine intake or exhaust;
- A change to the maximum normal operating rpm of the main or tail rotors;
- A change to the main or tail rotors, including a change in diameter, blade thickness or blade tip profile.

Note: The effect on the helicopter's noise characteristics of either carrying external loads or the installation of external equipment need not be considered.

ii. Emissions: A change that introduces an increase or decrease in the emissions certification levels. Examples of smoke and gaseous engine emission-related changes that might lead to a major change classification are:

- A change in engine thrust rating;
- A change to the aerodynamic flow lines through the engine;
- A change that affects the engine thermodynamic cycle, specifically relevant engine cycle parameters (e.g. combustor pressure P3, combustor entry temperature T3, Air Fuel Ratio (AFR));
- A change to the compressor that might influence the combustor inlet conditions and engine overall pressure ratio;
- A change to the combustor design (geometry);
- A change to the cooling of the combustor;
- A change to the air mass flow through the combustor;
- A change that affects the fuel spray characteristics.

## 9. Power plant Installation

Changes which include:

- i. control system changes which affect the engine/propeller/airframe interface;
- ii. new instrumentation displaying operating limits;
- iii. modifications to the fuel system and tanks (number, size and configuration);
- iv. change of engine/propeller type

## Appendix B Flight Conditions for a Permit to Fly – Approval Form (CAA Form 18B)



MALDIVES CIVIL AVIATION AUTHORITY  
REPUBLIC OF MALDIVES

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

CAA Form 18B

### FLIGHT CONDITIONS FOR A PERMIT TO FLY – APPROVAL FORM

<p>1. Applicant</p> <p><i>[Name of organisation providing the flight conditions and associated substantiations]</i></p>	<p>2. Approval Form No: Issue:</p> <p><i>[number and issue, for traceability purpose]</i></p>
<p>3. Aircraft manufacturer/type</p>	<p>4. Serial number(s)</p>
<p>5. Purpose</p> <p><i>[Purpose in accordance with 21.A.701(a)]</i></p>	
<p>6. Aircraft Configuration</p> <p>The above aircraft for which a permit to fly is requested is defined in <i>[add reference to the document(s) identifying the configuration of the aircraft]</i></p> <p><i>[For change(s) affecting the initial approval form: description of change(s). This form must be re-issued]</i></p>	
<p>7. Substantiations</p> <p><i>[References to the document(s) justifying that the aircraft (as described in 6) can perform the intended flight(s) safely under the defined conditions or restrictions.]</i></p> <p><i>[For change(s) affecting the initial approval form: reference(s) to additional substantiation(s). This form must be re-issued]</i></p>	
<p>8. Conditions/Restrictions</p> <p>The above aircraft must be used with the following conditions or restrictions:</p> <p><i>[Details of these conditions/restrictions, or reference to relevant document, including specific maintenance instructions and conditions to perform these instructions]</i></p>	
<p>9. Statement</p> <p>The flight conditions have been established and justified in accordance with 21.A.708. The aircraft as defined in block 6 above has no features and characteristics making it unsafe for the intended operation under the identified conditions and restrictions</p>	
<p><i>[when approved under a privilege of an approved organisation]</i></p> <p>10. Approved under: [ORGANISATION APPROVAL NUMBER]</p>	
<p>11. Date of issue</p>	<p>12. Name and signature <i>[Authorised signatory]</i></p>
<p><i>[CAA Approval. When not approved under a privilege of an approved organisation]</i></p> <p>13. Approval and date</p>	

CAA Form 18B, Issue 3, 30 Oct 2019

## Appendix C Application for a Permit to Fly (CAA Form 21)



MALDIVES CIVIL AVIATION AUTHORITY  
REPUBLIC OF MALDIVES

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ

CAA Form 21

### APPLICATION FOR A PERMIT TO FLY

1. Applicant	<i>[Name of applicant]</i>
2. Aircraft nationality and identification marks:	
3. Aircraft owner:	
4. Aircraft manufacturer/type	
5. Serial number(s)	
<p>6. Purpose of Flight <i>[Use terminology of 21.A.701(a) and add any additional information for accurate description of the purpose, e.g. place, itinerary, duration..]</i> <i>[For an application due to a change of purpose (ref. 21.A.713): reference to initial request and description of new purpose]</i></p>	
7. Expected target date(s) for the flight(s) and duration	
<p>8. Aircraft configuration as relevant for the permit to fly 8.1 The above aircraft for which a permit to fly is requested is defined in <i>[add reference to the document(s) identifying the configuration of the aircraft. Same as required in AMC 21.A.263(c)(6) or AMC 21.A.709(b) application approval form 18A or 18B, box 6]</i> 8.2 The aircraft is in the following situation related to its maintenance schedule: <i>[Describe status]</i></p>	
<p>9. Approval of flight conditions <i>[if not available at the time of application, indicate reference of request for approval]</i> Reference to: 1. CAA approval, if flight conditions are approved by CAA; or 2. DOA approval form, if approved under DOA privilege.</p>	
10. Date	12. Name and signature <i>[Authorised signatory]</i>

CAA Form 21, Issue 3, 30 October 2019