BHUTAN CIVIL AVIATION REQUIREMENTS

BCAR - 21

Initial Airworthiness

Issue 1

October 2010

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SECTION 1 – REQUIREMENTS

BCAR-21 Initial Airworthiness Effectivity

(a) This BCAR-21 Initial Airworthiness becomes effective on 1st October 2010.

(b) Organisations approved under BANRs prior to 1st October 2010 may continue their approval under BANRs until 31 December 2010. However, they are encouraged to apply under BCAR-21 after 31st December 2010 for converting their certifications to BCAR-21 approval.

SUBPART A -- GENERAL PROVISIONS

BCAR-21.1 Scope

This Subpart 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 Subpart.

BCAR-21.3B Airworthiness directives

a) An airworthiness directive means a document issued or adopted by the State of Design/DCA 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 DCA shall issue an airworthiness directive when:

1. An unsafe condition has been determined by the DCA 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 DCA 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, 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 DCA for approval.

2. Following the approval by the DCA 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

BCAR-21.11 Scope

a) DCA does not issue type certificates

b) This Subpart establishes the procedure for issuing type acceptance certificates (TAC) for products with foreign type certificates.

BCAR-21.12 Acceptability of foreign type certificates

The following foreign type certificates may be accepted by the DCA for issuing type acceptance certificate:

(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.

BCAR-21.15 Application

(a) An application for a TAC shall be made in a form and manner established by the DCA.

(b) An applicant for TAC shall provide DCA

1. Evidence that a type certificate acceptable to DCA as per BCAR-21.12, 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 date 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 DCA

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 DCA 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 DCA Inspector.

BCAR-21.16 Suspension or cancellation of a TAC

DCA 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.

BCAR-21.41 Type certificates

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 type-certificate data sheet for noise. The engine type-certificate data sheet includes the record of emission compliance.

(SUBPART C — NOT APPLICABLE)

SUBPART D -- CHANGES TO TYPE DESIGN

BCAR-21.90 Scope

This Subpart establishes the procedure for the approval of changes to type designs

BCAR-21.91 Classification of changes in type design

Changes in type design 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, or other characteristics affecting the airworthiness of the product. Except where DCA 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 BCAR-21.95 or BCAR-21.97 as appropriate, and shall be adequately identified.

BCAR-21.92 Eligibility

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

BCAR-21.93 Application

An application for approval of a change to a type design shall be made in a form and manner established by the DCA 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 BCAR-21.101.

BCAR-21.95 Minor changes

Minor changes in a type design shall be classified and approved either:

(a) By the DCA; or

(b) By a design organization acceptable to DCA, provided

1. The design organisation shall furnish a handbook to the DCA describing, directly or by cross-reference, the organisation, the relevant procedures and the products or changes to products to be designed.

2. The handbook shall be amended as necessary to remain an up-to-date description of the organisation, and copies of amendments shall be supplied to the DCA.

BCAR-21.97 Major changes

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

BCAR-21.101 Designation of applicable certification specifications and environmental protection requirements

An applicant for a minor change to a type design 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.

BCAR-21.103 Issue of approval

(a) The applicant shall be entitled to have a major change to a type design approved by the DCA after submitting the STC referred to in BCAR-21.97

(b) A minor change to a type design shall only be approved in accordance with BCAR-21.95 if it is shown that the changed product meets the applicable certification specifications/airworthiness code, as specified in BCAR-21.101.

BCAR-21.105 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 DCA and shall be retained in order to provide the information necessary to ensure the continued airworthiness 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 DCA and shall be retained in order to provide the information necessary to ensure the continued airworthiness and compliance with applicable environmental protection requirements of the changed product.

SUBPART E -- SUPPLEMENTAL TYPE-CERTIFICATES

BCAR-21.111 Scope

a) DCA does not issue supplemental type certificates

b) This subpart describes the requirements for the acceptance of supplemental type certificates

BCAR-21.111B Acceptability of foreign supplemental type certificates

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

(a) A supplemental type certificate issued by the 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.

BCAR-21.111C 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

BCAR-21.171 Scope

This Subpart establishes the procedure for issuing airworthiness certificates.

BCAR-21.172 Eligibility

A registered owner of an aircraft, registered in accordance with BCAR-Airworthiness of Aircraft, shall be eligible as an applicant for an airworthiness certificate for that aircraft under this Subpart.

BCAR-21.173 Classification

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

BCAR-21.174 Application

(a) Pursuant to BCAR-21.172, an application for an airworthiness certificate shall be made in a form and manner established by DCA.

(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 airworthiness code for the particular aircraft.

3. with regard to used aircraft:

— 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.

— A weight and balance report with a loading schedule.

— The flight manual when such material is required by the applicable airworthiness code for the particular aircraft.

— Historical records to establish the production, modification, and maintenance standard of the aircraft

— A recommendation for the issuance of a certificate of airworthiness and an airworthiness review certificate following an airworthiness review in accordance with BCAR-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 DCA.

BCAR-21.175 Language

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

BCAR-21.177 Amendment or modification

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

BCAR-21.179 Reserved

BCAR-21.180 Inspections

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

BCAR-21.181 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; and

2. The aircraft remaining on the Bhutan civil aircraft register; and

3. The type acceptance certificate under which it is issued not being previously invalidated under BCAR-21.16.

4. The certificate not being surrendered or revoked by DCA.

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

BCAR-21.182 Aircraft identification

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

BCAR-21.183 Issue of certificates of airworthiness

The DCA shall issue a certificate of airworthiness for:

1. new aircraft:

(i) Upon presentation of the documentation required by BCAR-21.174(b)(2).

(ii) When the aircraft conforms to an approved design and is in condition for safe operation. This may include inspections by DCA.

2. used aircraft:

(i) Upon presentation of the documentation required by BCAR-1.174(b)(3) demonstrating that:

— The aircraft conforms to a type acceptance certificate and any supplemental type-certificate, change or repair approved in accordance with this Part, and to applicable airworthiness directives, and

— The aircraft has been inspected by DCA in accordance with the applicable provisions of BCAR-M; and

(ii) When the aircraft conforms to an approved design and is in condition for safe operation. This may include inspections by DCA.

BCAR-21.184 Reserved

BCAR-21.185 Training

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 DCA Inspector

SUBPART I -- NOISE CERTIFICATES

BCAR-21.201 Scope

This Subpart establishes the procedure for issuing noise certificates.

BCAR-21.203 Eligibility

A registered owner of an aircraft, registered in accordance with BCAR-Airworthiness of Aircraft, shall be eligible as an applicant for a noise certificate for that aircraft under this Subpart.

BCAR-21.204 Application

(a) Pursuant to BCAR-21.203, an application for a noise certificate shall be made in a form and manner established by DCA.

(b) Each application shall include:

1. With regard to new aircraft:

(i) A statement of conformity:

— Issued by the production organisation, or

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

(i) With regard to used aircraft: 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 subparagraphs (b)(1) shall be issued no more than 60 days before presentation of the aircraft to the DCA.

BCAR-21.205 Issue of noise certificates

DCA shall issue a noise certificate upon presentation of the documents required by BCAR-21.204(b).

BCAR-21.207 Amendment or modification

A noise certificate may be amended or modified only by DCA.

BCAR-21.209 Reserved

BCAR-21.210 Inspections

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

BCAR-21.211 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; and

2. The aircraft remaining on the Bhutan civil aircraft register; and

3. The type acceptance certificate under which it is issued not being previously invalidated under BCAR-21.16.

4. The certificate not being surrendered or revoked by DCA.

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

SUBPART J -- DESIGN ORGANISATION APPROVAL

BCAR-21.231 Scope

(a) DCA does not issue design organisation approvals

(b) This Subpart establishes the procedure for the acceptance of design organisations.

BCAR-21.232 Acceptability of foreign design organisations

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

(a) A design organisation approval issued by the 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

BCAR-21.301 Scope

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

BCAR-21.303 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 has been shown in conjunction with type certification procedures; or

(b) Compliance with Subpart O; or

(c) In the case of standard parts, in accordance with officially recognised Standards.

BCAR-21.305 Reserved

BCAR-21.307 Release of parts and appliances for installation

No part or appliance (except a standard part), shall be eligible for installation in a type-certificated product unless it is:

(a) Accompanied by an authorised release certificate (DCA Form 1 or equivalent), certifying airworthiness; and

(b) Marked in accordance with Subpart Q.

(SUBPART L — NOT APPLICABLE)

SUBPART M -- REPAIRS

BCAR-21.431 Scope

(a) This Subpart establishes the procedure for the approval of repair design.

(b) 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.

(c) 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 Part.

(d) Reserved

BCAR-21.432 Eligibility

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

BCAR-21.433 Repair design

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

1. Show 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/DCA finds necessary to establish a level of safety equal to that established by the type-certification basis incorporated by reference in the type-certificate or supplemental type-certificate.

2. Submit all necessary substantiation data, when requested by the DCA.

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 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 holder as applicable.

BCAR-21.435 Classification of repairs

(a) A repair may be 'major' or 'minor'. The classification shall be made in accordance with the criteria of BCAR-21.91 for a change in the type design.

(b) A repair shall be classified ‘major’ or ‘minor’ under paragraph (a) either:

1. By the DCA, or

2. By a design organization acceptable to DCA, provided

(i) The design organisation shall furnish a handbook to the DCA describing, directly or by cross-reference, the organisation, the relevant procedures and the products or changes to products to be designed.

(ii) The handbook shall be amended as necessary to remain an up-to-date description of the organisation, and copies of amendments shall be supplied to the DCA.

BCAR-21.437 Issue of a repair design approval

When it has been declared and has been shown that the repair design meets the applicable certification specifications/airworthiness code and environmental protection requirements of BCAR-21.433(a)(1), it shall be approved:

(a) By the DCA, or

(b) By a design organisation accepted by DCA, that is also the type-certificate or the supplemental type-certificate holder.

(c) For minor repairs only, by a design organization acceptable to DCA, provided

1. The design organisation shall furnish a handbook to the DCA describing, directly or by cross-reference, the organisation, the relevant procedures and the products or changes to products to be designed.

2. The handbook shall be amended as necessary to remain an up-to-date description of the organisation, and copies of amendments shall be supplied to the DCA.

BCAR-21.439 Reserved

BCAR-21.441 Repair embodiment

(a) The embodiment of a repair shall be made by an appropriately approved maintenance organisation, or by a production organisation accepted by DCA.

(b) The design organisation shall transmit to the organisation performing the repair all the necessary installation instructions.

BCAR-21.443 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.

BCAR-21.445 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 DCA, or

2. By a design organisation accepted by DCA, provided

(i) The design organisation shall furnish a handbook to the DCA describing, directly or by cross-reference, the organisation, the relevant procedures and the products or changes to products to be designed.

(ii) The handbook shall be amended as necessary to remain an up-to-date description of the organisation, and copies of amendments shall be supplied to the DCA.

Any necessary limitations shall be processed in accordance with the procedures of BCAR-21.443.

(b) Where the organisation evaluating the damage under paragraph (a) is neither the DCA nor the type-certificate or supplemental type-certificate 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 or supplemental type-certificate holder, or manufacturer, as applicable.

BCAR-21.447 Record keeping

For each repair, all relevant design information, drawings, test reports, instructions and limitations possibly issued in accordance with BCAR-21.443, justification for classification and evidence of the design approval, shall:

(a) Be held by the design organisation accepted by DCA, at the disposal of the DCA, and

(b) Be retained by the design organisation accepted by DCA in order to provide the information necessary to ensure the continued airworthiness of the repaired products, parts or appliances.

BCAR-21.449 Instructions for continued airworthiness

(a) The holder of the design organisation accepted by DCA 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 DCA. 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 design organisation accepted by DCA 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 DCA.

BCAR-21.451 Reserved

(SUBPART N — NOT APPLICABLE)

SUBPART O -- TECHNICAL STANDARD ORDER AUTHORISATIONS

BCAR-21.601 Scope

a) DCA does not issue technical standard order (TSO) authorisations

b) This subpart describes the requirements for the acceptance of TSO authorisations

c) For the purpose of this Subpart:

1. ‘article’ means any part and appliance to be used on civil aircraft.

2. ‘Technical Standard Order’ (referred to in this Part as ‘TSO’) is a detailed airworthiness

specification issued by the National Aviation Authority to ensure compliance with a minimum performance standard for specified articles.

3. An article produced under a TSO authorisation accepted by DCA, is an approved article for the purpose of Subpart K.

BCAR-21.601B Acceptability of foreign TSO authorisations

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

(d) a TSO authorisation issued by the EASA

(e) a TSO authorisation accepted by EASA

(f) 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

BCAR-21.701 Scope

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/airworthiness code;

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 DCA 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.

BCAR-21.703 Eligibility

A registered owner of an aircraft, registered in accordance with 47, shall be eligible as an applicant for a permit to fly. A person eligible for an application for permit to fly is also eligible for application for the approval of the flight conditions.

BCAR-21.705 Reserved

BCAR-21.707 Application for permit to fly

(a) Pursuant to BCAR-21.703, an application for a permit to fly shall be made to the DCA in a form and manner established by DCA.

(b) Each application for a permit to fly shall include:

1. The purpose(s) of the flight(s), in accordance with BCAR-21.701;

2. The ways in which the aircraft does not comply with the applicable airworthiness requirements;

3. The flight conditions approved in accordance with BCAR-21.710.

(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 BCAR-21.709.

BCAR-21.708 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.

BCAR-21.709 Application for approval of flight conditions

(a) Pursuant to BCAR-21.707(c), an application for approval of the flight conditions shall be made to:

1. DCA in a form and manner established by DCA; or

2. An appropriately approved design organisation accepted by DCA, under subpart J

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

3. The proposed flight conditions;

4. The documentation supporting these conditions; and

5. A declaration that the aircraft is capable of safe flight under the conditions or restrictions of paragraph BCAR-21.708(b).

BCAR-21.710 Approval of flight conditions

(a) Flight conditions shall be approved by:

1. the DCA; or

2. an appropriately approved design organisation accepted by DCA, under subpart J.

(b) Reserved

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

BCAR-21.711 Issue of a permit to fly

(a) The DCA shall issue a permit to fly:

1. Upon presentation of the data required by BCAR-21.707; and

2. When the conditions of BCAR-21.708 have been approved in accordance with BCAR-21.710; and

3. When the DCA, 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 BCAR-21.708 before flight.

(b) Reserved

(c) Reserved

(d) The permit to fly shall specify the purpose(s) and any conditions and restrictions approved under BCAR-21.710.

(e) Reserved

(f) Reserved

BCAR-21.713 Changes

(a) Any change that invalidates the flight conditions or associated substantiation established for the permit to fly shall be approved in accordance with BCAR-21.710. When relevant an application shall be made in accordance with BCAR-21.709.

(b) A change affecting the content of the permit to fly requires the issuance of a new permit to fly in accordance with BCAR-21.711.

BCAR-21.715 Language

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

BCAR-21.719 Transferability

(a) A permit to fly is not transferable.

(b) Reserved

BCAR-21.721 Inspections

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

BCAR-21.723 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 BCAR-21.711(d) associated to the permit to fly;

2. The permit to fly not being surrendered or revoked by DCA;

3. The aircraft remaining on Bhutan civil aircraft register.

(b) Notwithstanding subparagraph (a), a permit to fly issued for the purpose of BCAR-21.701(15) may be issued for unlimited duration.

(c) Upon surrender or revocation, the permit to fly shall be returned to the DCA.

BCAR-21.725 Renewal of permit to fly

Renewal of the permit to fly shall be processed as a change in accordance with BCAR-21.713.

BCAR-21.727 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.

BCAR-21.729 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 DCA and shall be retained in order to provide the information necessary to ensure the continued airworthiness of the aircraft.

(b) Reserved

SUBPART Q -- IDENTIFICATION OF PRODUCTS, PARTS AND APPLIANCES

BCAR-21.801 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 DCA 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 and any heater assembly shall be permanently and legibly marked with the manufacturer's name, part number, or equivalent, and serial number, or equivalent.

BCAR-21.803 Handling of identification data

(a) No person shall remove, change, or place identification information referred to in BCAR-21.801(a) on any aircraft, engine, propeller, propeller blade, or propeller hub, or in BCAR-21.807(a) on an APU, without the approval of DCA.

(b) No person shall remove or install any identification plate referred to in BCAR-21.801, or in BCAR-21.807 for an APU, without the approval of DCA.

(c) By way of derogation from paragraphs (a) and (b), any natural or legal person performing maintenance work under the applicable Bhutan Civil Aviation Regulations, in accordance with methods, techniques and practices established by DCA:

1. Remove, change, or place the identification information referred to in BCAR-21.801(a) on any aircraft, engine, propeller, propeller blade, or propeller hub, or in BCAR-21.807(a) on an APU; or

2. Remove an identification plate referred to in BCAR-21.801, or BCAR-21.807 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.

BCAR-21.804 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; 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 DCA 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.

BCAR-21.805 Identification of critical parts

In addition to the requirement of BCAR-21.804, 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.

BCAR-21.807 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 DCA 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 fire- proof 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.

For the Department of Civil Aviation, Bhutan
Phala Dorji
DIRECTOR GENERAL

SECTION 2 - ACCEPTABLE MEANS OF COMPLIANCE AND GUIDANCE MATERAIL

The Acceptable Means of Compliance (AMC) and Guidance Material (GM) to BCAR-21 Section 1 – Requirements.

"Certification Specifications" (CS) refers when used in the text to the airworthiness codes and associated acceptable means of compliance developed by EASA in accordance with Articles 13(b) and 14.2(a) of the European Commission Basic Regulation.

"Airworthiness code" refers to the comprehensive and detailed airworthiness codes established, adopted or accepted by an ICAO Contracting State for the class of aircraft, engine or propeller under consideration.

"Acceptable Means of Compliance" (AMC) illustrate a means, but not the only means, by which a specification contained in an airworthiness code or a requirement can be met.

"Guidance Material" (GM) helps to illustrate the meaning of a specification or requirement.

A numbering system has been used in which the Acceptable Means of Compliance and Guidance Material uses the same number as the paragraph in BCAR-21 Section 1 to which it refers. The number is preceded by the letters AMC or GM as appropriate to distinguish the material from the BCAR 21 Section 1 itself.

SUBPART A - GENERAL

SUBPART B – TYPE-CERTIFICATES

GM 21.11 Scope

The type acceptance certificate has no holder as such. The type acceptance certificate is issued to recognise a foreign type certificate in Bhutan. Once issued, any subsequent aircraft of that type may enter Bhutan 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 will imply acceptance of the associated engine and/or propeller type certificate.

GM 21.12(b) Acceptability of foreign type certificates

EASA website can be checked to see the type certificates accepted by EASA

AMC 21.15(a) Application

1. The applicant should obtain and lodge a completed DCA Form No. 735 "Type Acceptance Certificate - Application".

2. This form may be obtained from the DCA website at www.aviainfo.gov.mv. Alternatively, a copy of the form may be obtained from DCA

3. The application form should state exactly which models are to be included on the TAC.

These models must be included on the foreign TC. The data requirements specified in BCAR-21.15 (c) must be met for each model included on the TAC.

(SUBPART C – NOT APPLICABLE)

SUBPART D – CHANGES TO TYPE DESIGN

GM 21.91 Classification of changes to a type design

1. PURPOSE OF CLASSIFICATION

Classification of changes to a type design into MAJOR or MINOR is to determine the approval route to be followed in BCAR-21 Subpart D, i.e., either BCAR-21.95 or BCAR-21.97, or alternatively whether application and approval has to be made in accordance with BCAR-21 Subpart E.

2. INTRODUCTION

2.1 BCAR-21.91 proposes criteria for the classification of changes to a type design as minor and major.

(i) This GM is intended to provide guidance on the term appreciable effect affecting the airworthiness of the product from BCAR-21.91, 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 design change in order to fulfils the requirements of BCAR -21.91 where classification is the first step of a procedure.

Note: For classification of Repairs see GM 21.435.

(ii) Although this GM provides guidance on the classification of major changes, as opposed to minor changes as defined in BCAR-21.91, the GM and BCAR-21.91 are deemed entirely compatible.

3. ASSESSMENT OF A DESIGN CHANGE FOR CLASSIFICATION

3.1 Changes to the type design

3.1.1 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.

Alteration to any of the data included within the scope of 3.1.1 is considered a change to the type design.

3.2 Classification Process (see attached diagram)

BCAR- 21.91 requires all changes to be classified as either major or minor, using the criteria of BCAR- 21.91 and the complementary guidance of paragraph 3.3.

On some occasions, the classification process is initiated at a time when some data necessary to make a classification decision are not yet available. Therefore, the applicant should wait for availability of data before making a decision.

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

Reasons for a classification decision should be recorded.

3.3 Complementary guidance for classification of changes.

A change to the type design is judged to have an "appreciable effect on other characteristics affecting the airworthiness of the product" and therefore should be classified 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 type-certification basis (such as special condition, equivalent safety finding, elect to comply, exemption, reversion, later requirements).

(ii) Where the applicant proposes a new interpretation of the requirements used for the type type-certification basis that has not been published as AMC material or otherwise agreed with the DCA.

(iii) Where the demonstration of compliance uses methods that have not been previously accepted as appropriate for the nature of the change to the product or for similar changes to other products designed by the applicant.

(iv) Where the extent of new substantiation data necessary to comply with the applicable airworthiness requirements and the degree to which the original substantiation data has to be re-assessed and re-evaluated is considerable.

(v) The change alters the Airworthiness Limitations or the Operating Limitations.

(vi) The change is made mandatory by an airworthiness directive or the change is the terminating action of an airworthiness directive (ref. BCAR-21.3B). See note 1.

(vii) Where the change introduces or affects functions where the failure effect is classified catastrophic or hazardous.

Note 1: The design change previously classified minor and approved prior to the airworthiness directive issuance decision needs no re-classification. However, the DCA 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 BCAR-21.91.

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 21.91.

Appendix A to GM 21.91: Examples of Major Changes per discipline

The information below is intended to provide a few major change examples per discipline, resulting from application of BCAR-21.91 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 BCAR-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 BCAR-21.91. 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

Changes which adversely affect the approved performance, such as high altitude operation, brake changes that affect braking performance.

Changes which adversely affect the flight envelope.

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 EUROCAE ED12B/RTCA DO-178B "Software Considerations in Airborne Systems and Equipment Certification" or equivalent, the change should be classified as major if either of the following apply, and the failure effect is Catastrophic, Hazardous or Major:

(1) 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

(2) The software is upgraded to or downgraded from Level A, Level B or Level C; or

(3) 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 ED-12B/DO-178B 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 requirements/interpretations.

5 Propellers

Changes to:

(i) Diameter

(ii) Airfoil

(iii) Planform

(iv) Material

(v) 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-515or equivalent) or their life limits.

(iv) To a structural part which requires a resubstantiation 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

A change that introduces an increase in noise or emissions.

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.

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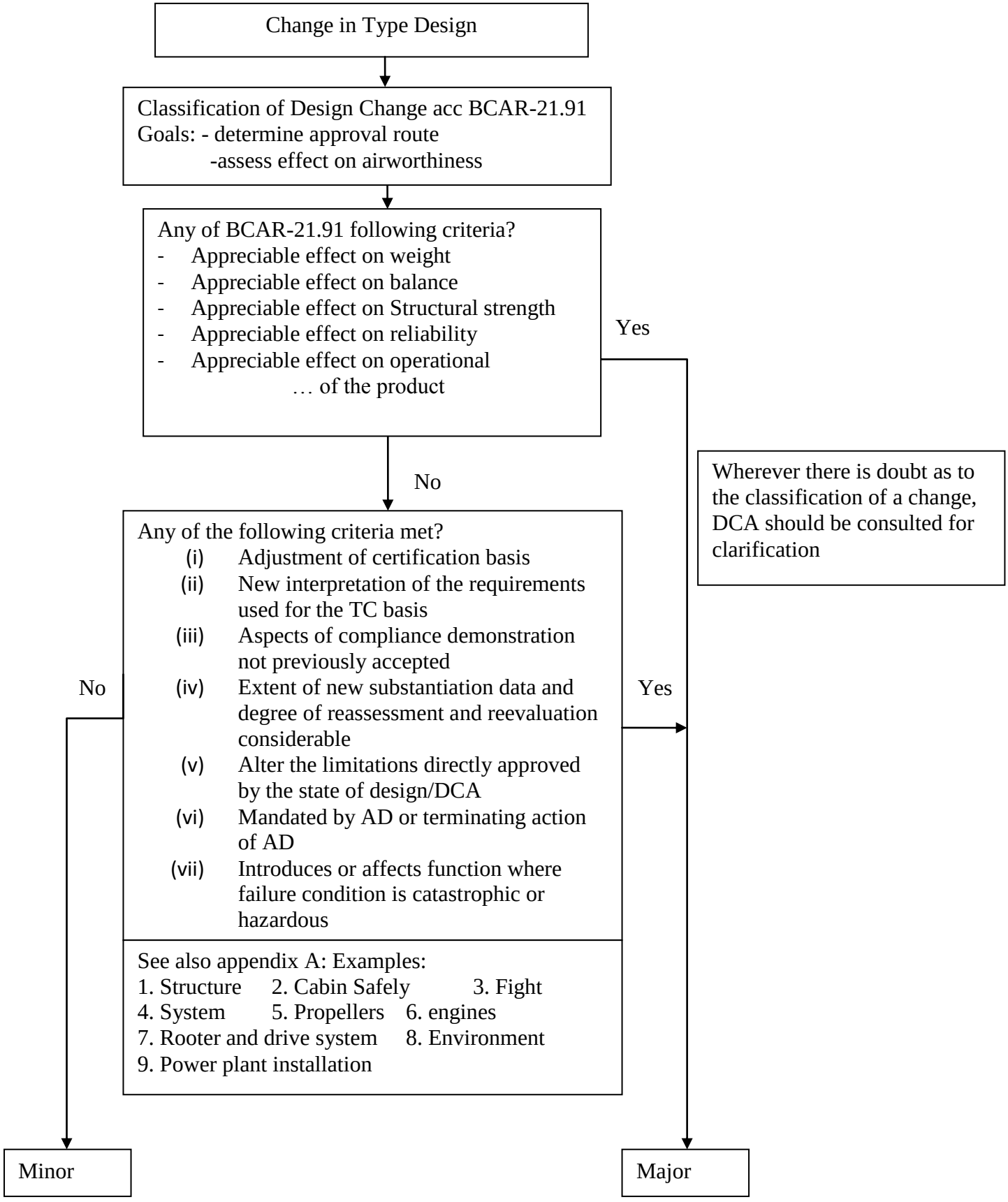
Classification process



AMC 21.93 Application

SUPPORTING DOCUMENTATION REQUIRED FOR MINOR CHANGE (MODIFICATION) APPROVAL APPLICATION IN SUPPORT OF BCAR-21.93

1. The relevant Type Certificate Data Sheet (TCDS) reference number should be stated.
The TCDS may be identified from the EASA website. Where there is no EASA TCDS then the TCDS from the state of aircraft design is applicable.

2. The certification basis of the change (modification) must be defined (e.g. FAR 23).
For a 'minor' change, this is typically the certification basis at the time of original aircraft certification as stated in the TCDS plus any additional requirements relevant to the modification. Alternatively, the applicant may simply elect to comply with the latest requirements (e.g. CS-23).

3. The individual requirements of the certification basis that are relevant to the change shall be stated, together with identification of the means of compliance with those requirements (see para 4).

*For modifications to aircraft systems these identified individual requirements would include, **as a minimum**:*

- *xx-1301*
- *xx-1309*
- *xx-1529*

(where xx = the appropriate code, e.g. 23, 25, 27 or 29 of the CS, FAR, JAR etc).

Further requirements may include (not an exhaustive list):

- *Airworthiness Directives*

Where applicable, the following guidance information may be referenced:

- *JAA Temporary Guidance Leaflets (TGL)*
- *EASA AMC-20*
- *CAP 455 Airworthiness Notices (in particular AN 12 appendices experience from incidents).*

4. The data pack submitted shall show how the certification basis derived in the above paragraphs has been complied with. For a change to an aircraft system the following details would typically be included:

- *A description of the modification*
- *A general arrangement drawing/diagram of the installed equipment*
- *Details of mechanical attachment means and precise locations of installed equipment (including antennas, indicators and switches)*

- *Instructions to support continued airworthiness (see xx-1529)*

- *Identification (by part number) and assessment of installed equipment suitability. This would include the assessment of any TSO limitations, deviations and environmental qualification (this is typically found in the equipment manufacturer's Declaration of Design and Performance – DDP)*

And where applicable:

- *Wiring Diagrams*

- *An electrical load analysis including details of battery load and generation system capacity*

- *Testing details (e.g. operation, performance, EMI)*

- *A stress analysis of attachments*

- *Any Flight Manual/POH amendments as applicable*

- *Any amendments to radio station license, if issued*

The TCDS, requirements and guidance documentation referenced above can be obtained from either the CAA website www.caa.co.uk, EASA website www.easa.eu.int or from JAA.

*An example of a Compliance Statement Report

XX 23 Para**	Requirement	Compliance	References
23.1301(a) (c)	Installed equipment to be of a design appropriate to its intended function. Be installed according to specified limitations	Switch / circuit breaker p/n ********** Design Review of test data provided for the switch / circuit breaker. No limitations identified	Manufacturers Test data Report Reference ****** Iss **
23.1301 (b)	Be labelled as to its identification or function . . .	All equipment, switches, ground points, circuit breakers and wire bundles appropriately labelled.	Wiring Diagram ******* Installation drawing **********
23.1301 (d)	Function properly when installed.	System tested by ground tests on completion	Para ** of accomplishment instructions *******
23.1309 (a)	System must not adversely affect existing systems	The system does not interface with any other system except dedicated altitude encoder. Installation is physically separate from other systems. EMI tests carried out post-installation.	Wiring Diagram ********** Installation drawing ********** Para ** of accomplishment instructions *****
23.1309 (b)	Effect on continued safe flight	All anticipated failure modes are self-contained. System not required for continued safe flight.	

23.1309 (c)(d)	Essential loads	N/A (see 23.1309 (b))	
23.1309 (e)	Installation environment	All equipment bonded i.a.w. aircraft manufacturers standard practice.	Installation drawing ********* Para ** of accomplishment instructions ******
23.1529	Instructions for Continued Airworthiness	Instructions for continued airworthiness in accordance with Appendix G must be prepared.	As per the Appendix G, but in some cases the modification instructions may be enough to satisfy this requirement.
23.1351(a)	Electrical system capacity	Existing ** A c/bkr used supplying nominal 2.2A load. Wire gauge 20 appropriate. Main Bus capacity **VA – new equipment introduces additional load of **A. Battery endurance re-calculated and found to be 43 minutes.	Electrical Load Analysis. Report No *******
Etc			

* Each Compliance Statement Report must be customised to the aircraft & the change.
** This may be any code specified in the TCDS or you may elect to use CS23.

AMC 21.95 (b)1Minor 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:
- classify changes to type design or repairs
- verify compliance
- approve minor changes to type design and minor repairs
- issue information or instructions

1.12 Independent system monitoring

Part 2. Procedures

2.1 Management of changes to type design and design of repairs
- configuration control

- classification
- 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
- in relations with the changes and repairs
- in relation with failures/malfunctions and defects (i.e. Services - Bulletins)

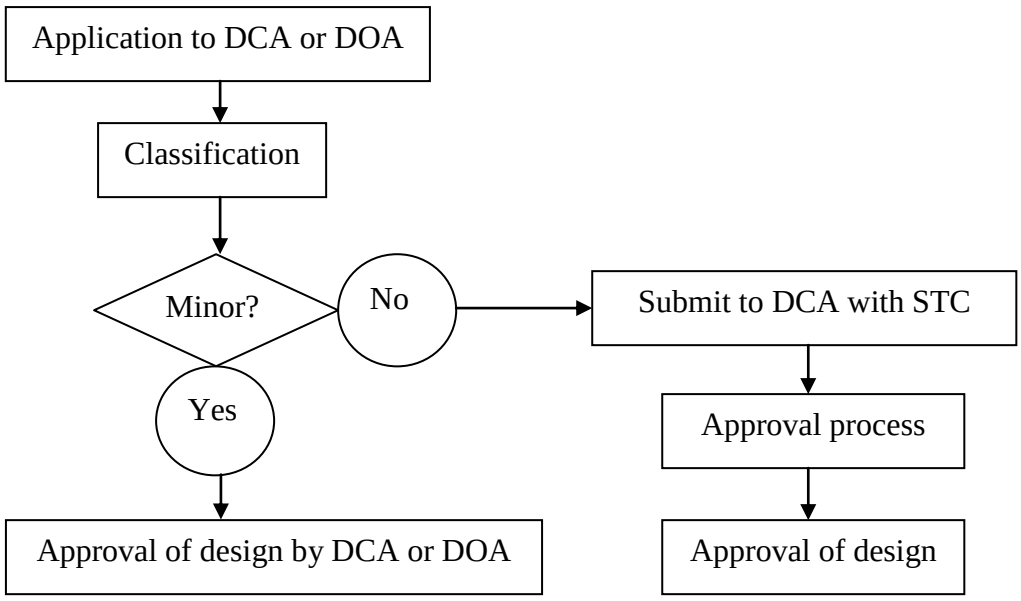
2.6 Record keeping

GM 21.95(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 DCA.

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

GM to 21.95 and 21.97 Type design change (modification) approval flowchart



AMC 21.101 Designation of applicable certification specifications and environmental protection requirements – Explanation of terminology

Type-certification basis: the applicable airworthiness codes as established in BCAR-21.101, special conditions, equivalent level of safety findings; and exemptions applicable to the product to be certificated.

SUBPART E – SUPPLEMENTAL TYPE-CERTIFICATES

There are no AMC or GM items associated with this Subpart.

SUBPART F – RESERVED

SUBPART G – RESERVED

SUBPART H – AIRWORTHINESS CERTIFICATES

AMC 21.174 (b)2(i)Application

1. 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

SUBPART I – NOISE CERTIFICATES

There are no AMC or GM items associated with this Subpart.

SUBPART J – DESIGN ORGANISATION APPROVAL

There are no AMC or GM items associated with this Subpart.

SUBPART K – PARTS AND APPLIANCES

AMC 21.303(c) Standard Parts

In this context a part is considered as a "standard part":

1. 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 airworthiness code (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 airworthiness code shall comply with the applicable TSO or equivalent and is not considered a standard part (e.g. oxygen equipment).

GM 21.303(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 21.303(c).

GM 21.307 Release of Parts and Appliances for Installation

"Authorised release certificate certifying airworthiness for a new part or appliance" means certifying that the part or appliance conforms with the approved design data and is in condition for safe operation

(SUBPART L – NOT APPLICABLE)

SUBPART M - REPAIRS

GM 21.431(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, design approval or 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/DCA, or by an appropriately approved design organisation.

NB: Flow Chart addresses the procedures that should be followed for approval of a repair

AMC 21.433 (a) and 21.447 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 requirements and references of justifications,

c. repair drawing and/or instructions and scheme identifier,

d. correspondence with the TC, STC, design approval or TSOA 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 BCAR-21.433 (b).

5. Repairs to engine critical parts would normally only be accepted with the involvement of the TC holder.

GM 21.435(a) Classification of repairs

1. Clarification of the terms Major/Minor

In line with the definitions given in BCAR-21.91, 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 affect 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 21.435(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 DCA.

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

GM 21.437 Issue of repair design approval

1) Approval by DOA holder

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

(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 BCAR-21.435 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.

GM 21.443 Limitations

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

GM 21.445 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 21.445(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 DCA.

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

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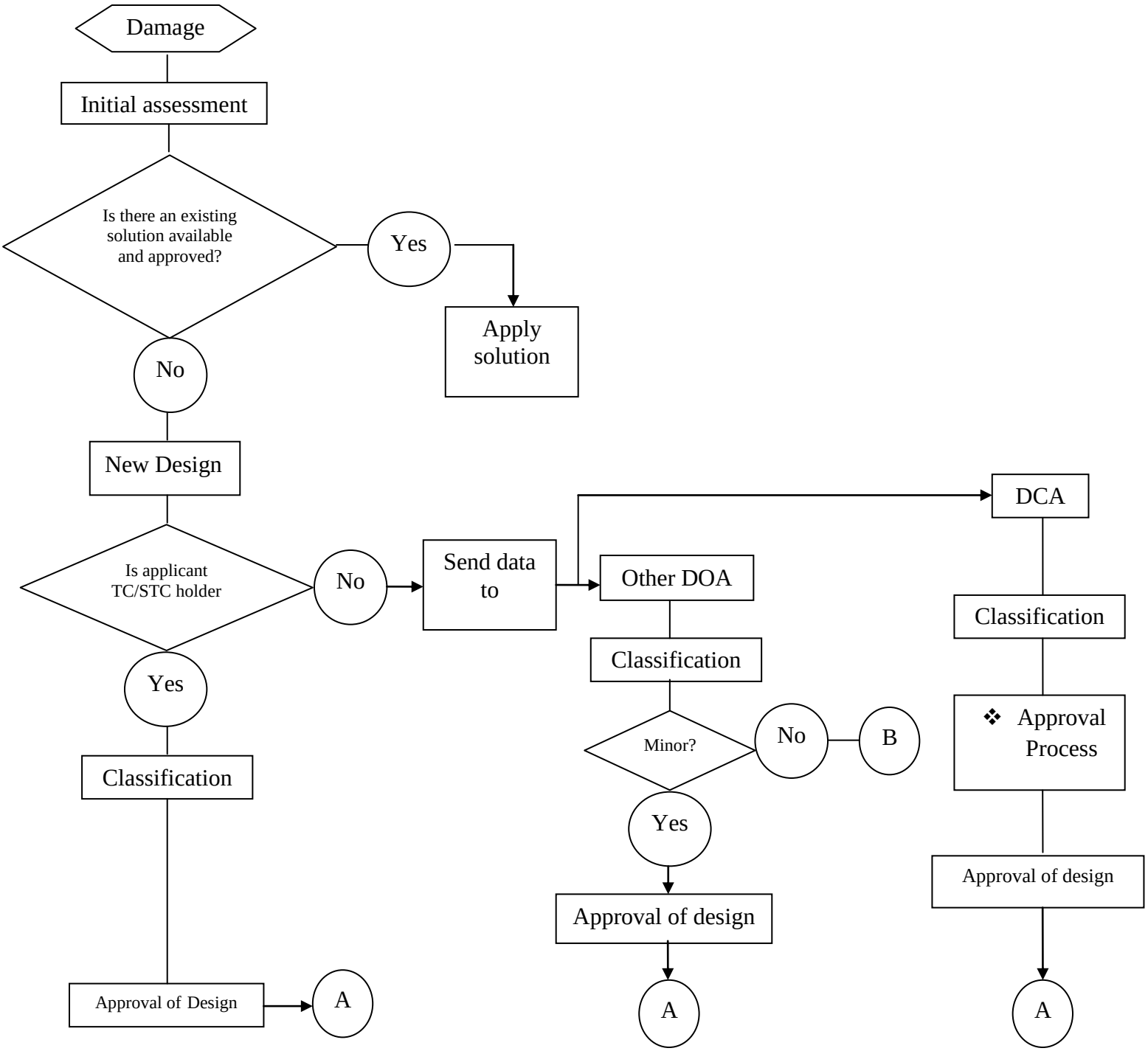
Operator



Legend

A — Apply solution

B — Submit to DCA after finding a solution in collaboration with TC/STC holder

❖ In case of major repair DCA would require design solution/data from TC/STC holder

(SUBPART N – NOT APPLICABLE)

SUBPART O – TECHNICAL STANDARD ORDER AUTHORISATIONS

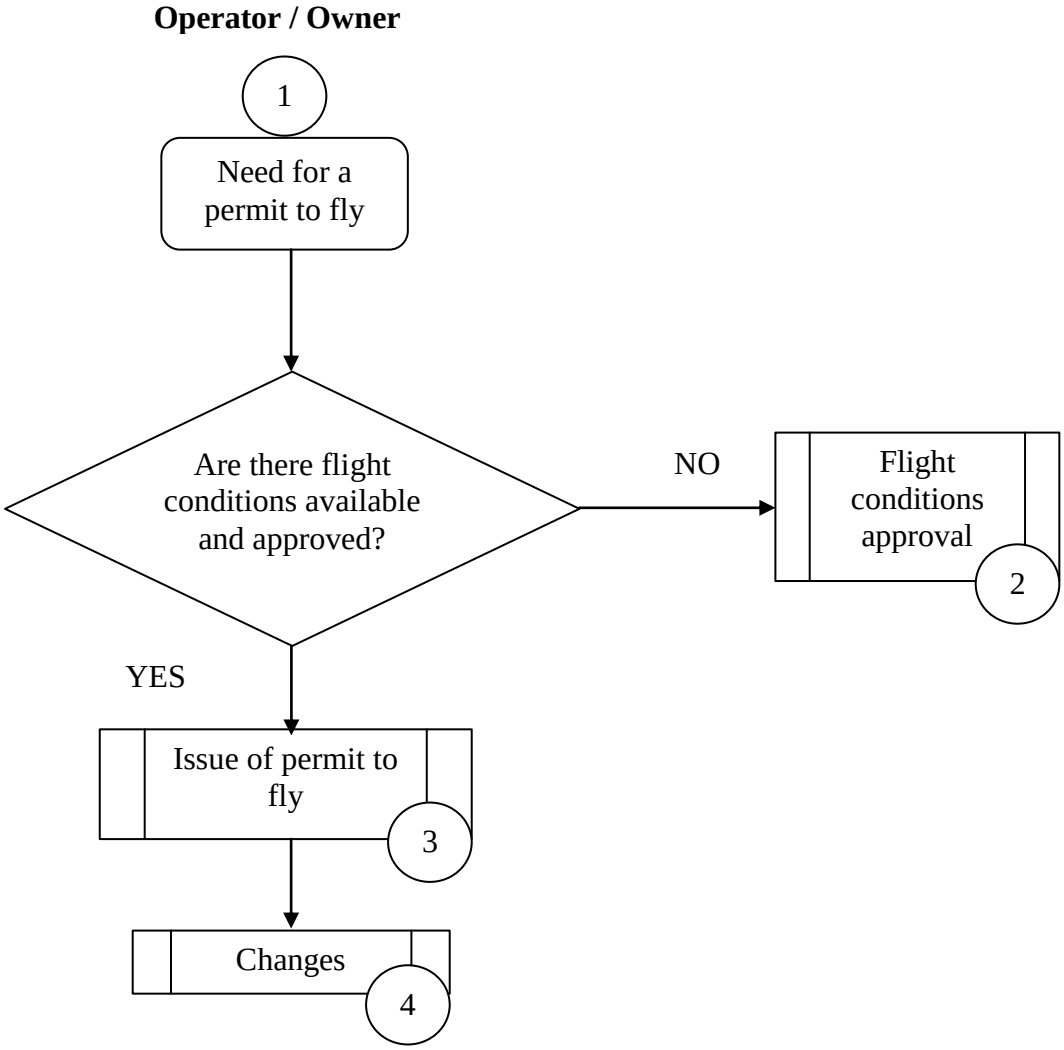
There are no AMC or GM items associated with this Subpart.

SUBPART P – PERMIT TO FLY

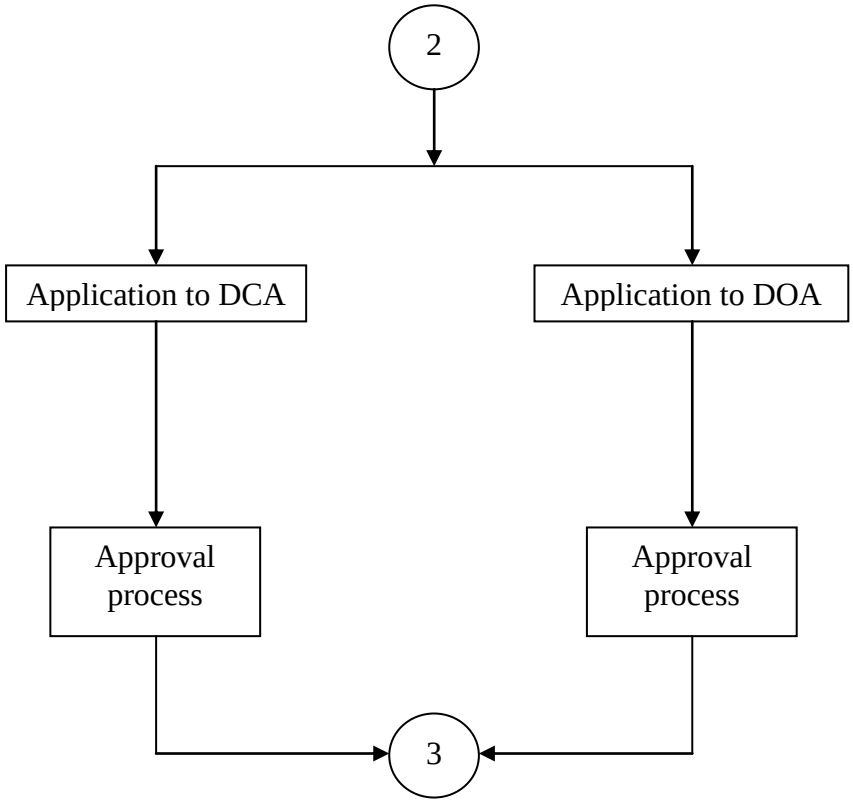
GM to Subpart P

The process allowing a flight under a permit to fly can be described as follows:
1. Flow-chart 1: overview
2. Flow-chart 2: approval of flight conditions
3. Flow-chart 3: issue of permit to fly
4. Flow-chart 4: changes after first issue of permit to fly

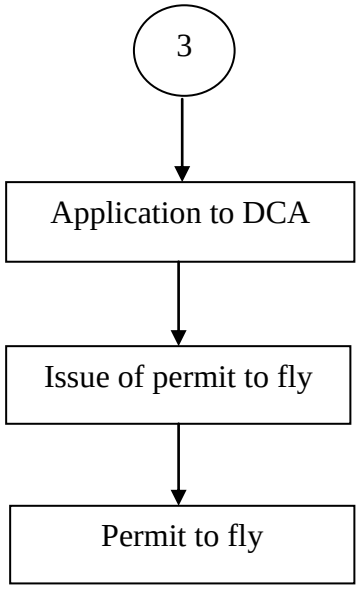
Flow-chart 1: overview



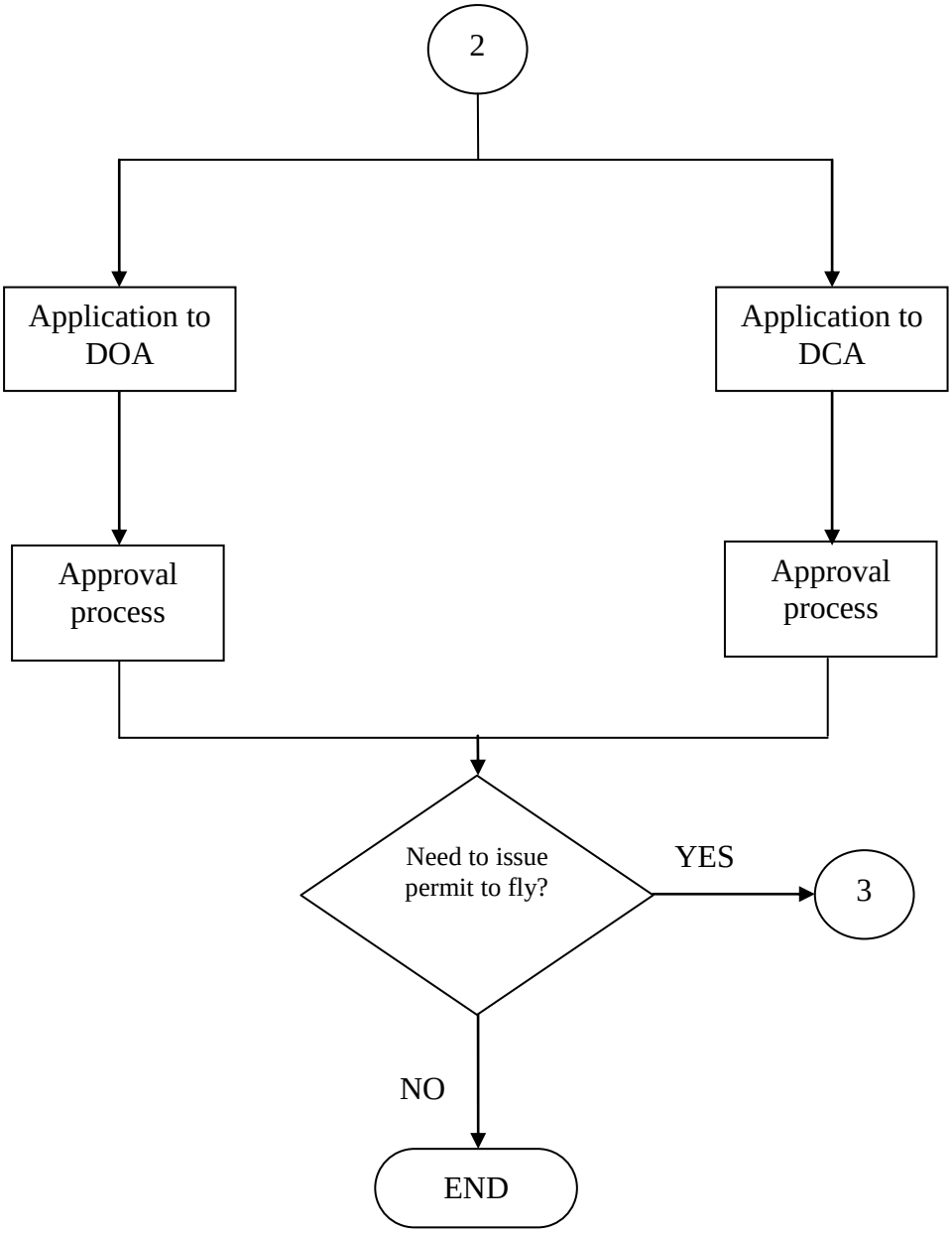
Flow-chart 2: approval of flight conditions



Flow-chart 3: issue of permit to fly



Flow-chart 4: changes after first issue of permit to fly



GM 21.701 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. Paragraph BCAR-21.701 identifies cases where the issuance of a Certificate of Airworthiness may not be possible or appropriate and this paragraph 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) Showing 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 and Certificate of Airworthiness (C of A) 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 C of A will be issued.

(8) Flying the aircraft for Authority acceptance:
- In the case of inspection flight test by the authority before the C of A 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 takeoff 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 airworthiness requirements before conformity to the environmental requirements has been found:
- Flying an aircraft which has been shown to comply with all applicable airworthiness requirements 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 airworthiness requirements, 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 shown 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.

GM 21.701 Reserved

GM 21.703 Reserved

GM 21.705 Reserved

GM 21.707(a) Application

DCA Form 21 should be obtained from the DCA

GM 21.708(b)(6) Continuing airworthiness

In most cases a simple reference to existing maintenance requirements will suffice for aircraft that have a temporarily invalid C of A.
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 21.708(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 21.708(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 21.708(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 takeoff 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 DCA 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 airworthiness requirements?

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 takeoff 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.

EXAMPLE of operating limitations which may be prescribed as part of the permit to fly:
Aircraft type: xxxxxx Model: yyyy
Limitations:

1. Maximum weight must not exceed 8,150 pounds.

2. 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.

3. Centre of gravity limits must not exceed (fwd) +116.8 and (aft) +124.6.

4. Aerobatics are prohibited.

5. Use of autopilot while in overweight condition is prohibited.

6. Weather conditions with moderate to severe turbulence should be avoided.

7. 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 takeoff, that the aircraft is airworthy.

8. When operated in the overweight condition, the cruising speed (Vc) shall not exceed 185 m.p.h. and the maximum speed (Vne) shall not exceed 205 m.p.h.

9. 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 21.708(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 BCAR-21.713 and when necessary a new permit to fly should be issued in accordance with BCAR- 21.711.

AMC 21.709(b) Submission of documentation supporting the establishment of flight Conditions

Together with the application, the documentation required by BCAR-21.709(b) must be submitted with the approval form (DCA Form 18B) defined below, 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 8 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.

GM 21.710 Reserved

GM 21.711(d) Additional conditions and restrictions

The conditions and restrictions prescribed by the DCA may include airspace restrictions to make the conditions approved under BCAR-21.710 more concrete, or conditions outside the scope of the ones mentioned in BCAR-21.708(b) such as a radio station license.

GM 21.713 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.

GM 21.719 Reserved

SUBPART Q – IDENTIFICATION OF PRODUCTS, PARTS AND APPLIANCES

There are no AMC or GM items associated with this Subpart.

For the Department of Civil Aviation, Bhutan
Phala Dorji
DIRECTOR GENERAL