

Safety Regulation Group



CAP 553

BCAR Section A

**Airworthiness Procedures where the CAA has Primary
Responsibility for Type Approval of the Product**

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CAP 553

BCAR Section A

Airworthiness Procedures where the CAA has Primary Responsibility for Type Approval of the Product

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Chapter A8-22	Approval of Qualified Entities – Group QE Supplement 1 to A8-22 Appendix 1 to A8-22

Revision History

Issue 6, Amendment 1

31 January 2003

The purpose of this Amendment 1 to Issue 6 is to publish BCAR Working Draft Papers 910, 913, 914, 915, 916, 917, 918, 920, 921, 922 and 923 as Requirements together with editorial changes convenient to be incorporated at this time.

Pages dated '31 January 2003 (Corr.)' indicate pages that have been corrected as a result of errors in the original 31 January 2003 issue. This indicates changing all occurrences of Constructor to Manufacturer in order to bring BCAR A into line with ICAO terminology. Marginal lines have been included to highlight where the corrections are.

Technical Changes

Chapter	Description
Foreword	A caveat has been added to the Foreword to clarify that BCAR A does not apply to those aircraft that have been the responsibility of the European Aviation Safety Authority since 28 th September 2003.
A1-2	'NOTE' in 2.1.2 amended to reflect recent changes to the Air Navigation Order.
A1-3	Deletion of incorrect reference.
A1-4	Incorporation of Paper 910.
A2-5	Deletion of the word 'instruments' from paragraph 1.1.
A3-4	Incorporation of Paper 918. This Chapter has been amended to reflect current practices. It modifies the applicability of Group II as defined in the Chapter, includes changes to clarify that Procedure 1 applies to Group I and Procedure 2 to Group II, and introduces a reference to JAR-OPS in the section addressing the weighing of aircraft.
A3-5	Incorporation of Paper 913. Addition of new text to paragraph 1.3 a) ii) which focuses the concentration of airworthiness flight testing on older aircraft where more significant problems have been found to lie, as well as moving the previous NOTE to become a continuation of 1.3 a) ii) rather than a separate NOTE.
A3-11	Change of contact details in paragraph 1, removal of incorrect information in paragraph 2.1 and removal of old contact name in paragraph 5.
A5-3	Deletion of reference to cancelled material.
A5-6	Deletion of reference to cancelled material.
A5-7	In paragraph 9.4 reference to MMEL's being 'despatched' has been removed, MMEL's are now available on the CAA website. In paragraph 9.6 TR's are also now available via the CAA website, they are not necessarily accompanied by a 'list of effective Temporary Revisions' as the TRs themselves are incorporated in the MMEL download. TRs are no longer published on yellow paper.
A6-2, Appendix 1	Deletion of reference to cancelled material.
A6-5	In paragraphs 1.3 and 3 cross references updated.

A8-7	Deletion of reference to cancelled material.
A8-9 and its appendices	Incorporation of Paper 916. Changes made to increase clarity of existing text.
A8-15	Incorporation of Paper 917. This Chapter has been amended to reflect current practices. It now refers to the Groups I and II, and Procedures 1 and 2 of Chapters A3-4. A reference to CAP 520 "Light Aircraft Maintenance", has been added.
A8-16	Deletion of old reference.
A8-20	Incorporation of Paper 923.
A8-20, Appendix 1	Incorporation of Paper 922.
A8-20, Supplement 1	Incorporation of Paper 920.
A8-20, Supplement 2	Incorporation of Paper 921.
A8-20, Supplement 3	Incorporation of Paper 914.
A8-20, Supplement 4	Incorporation of Paper 915.

Issue 6, Amendment 2

25 February 2008

The purpose of this Amendment 2 to Issue 6 is to publish new BCAR Chapter A8-21 as a Requirement, together with editorial changes convenient to be incorporated at this time.

Technical Changes

The following Chapters have been amended as shown:

Chapter	Description
Explanatory Note	The 'Explanatory Note' has been replaced by a 'Revision History', to keep the format in line with Civil Aviation Publications.
Foreword	NOTE b) to paragraph 1 deleted as no longer applicable and subsequent sub-paragraphs renumbered. NOTE c) to paragraph 1 updated to include reference number to European Commission Regulation (EC) No. 2042/2003. Paragraph 3.1: reference to Air Navigation Order updated to 2005. Paragraph 6.2 deleted as no longer applicable. Paragraph 8 word 'England' changed to 'UK'.
A1-2	Amended to reflect changes in Categories of Certificates of Airworthiness and update cross-references to the Air Navigation Order.
Introductory Note to Sub-Section A8	Group categories for A1, A2 and E1/E2 amended to include a note regarding non-acceptance of new applications from 25 February 2008 following the introduction of new Chapter A8-21, and withdrawal of A1, A2 and E1/E2 approvals after a 2-year transition period. Group categories B2, B3, C1 and C2 deleted as approvals cancelled in September 2005 are no longer valid. New group categories A1, A2 and E1 added for Chapter A8-21.

A8-3 Supplement 2	Paragraphs 1.1 and 3.2.1 updated to include reference to Commission Regulation (EC) 2042/2003 Part M and Part 145. Paragraph 2.1 updated to reflect change of Department name and address. Paragraph 2.1 NOTE deleted as considered superfluous. Paragraph 3.1.1 a) amended to include reference to Part 66 B1, B2 and C Licences.
A8-4	Chapter deleted as no longer valid.
A8-5	Chapter deleted as no longer valid.
A8-7	Chapter deleted as no longer valid.
A8-16	Chapter deleted as no longer valid.
A8-21 A8-21 Supplement 1 A8-21 Supplement 2 A8-21 Supplement 3 A8-21 Appendix 1 A8-21 Appendix 2 A8-21 Appendix 3	New Chapter 'Approval of Organisations Responsible for Design or Production', introduced to reflect the coming into force of Implementing Rule 1702/2003 Part 21 and the resulting need for a complementary UK requirement applicable to those organisations designing and producing non-EASA aircraft (Annex II aircraft).

Issue 6, Amendment 3

8 August 2008

The purpose of this Amendment 3 to Issue 6 is to amend Chapter A8-20 to extend the applicability of Group E4 and Group M5 approvals; and to publish new BCAR Chapter A8-22 as a Requirement, together with editorial changes convenient to be incorporated at this time.

Technical Changes

Chapter	Description
Foreword	Paragraph 1: Reference to 'Regulation (EC) No. 1592/2002 of the European Parliament and of the Council of 15 July 2002' replaced by 'Regulation (EC) No. 216/2008 of the European Parliament and of the Council of 20 February 2008'. Paragraph 1 Note a): Reference to EC Regulation No. updated as above.
A3-7	Paragraph 11.3: Amended to correspond with the changes made to Chapter A8-20 as detailed below.
A8-20 A8-20 Appendix 1 A8-20 Supplements 1-4	Chapter amended to extend the applicability of Group E4 and Group M5 approvals to lighter aircraft, and also to address an AAIB Safety Recommendation which stipulates that English language translations of all foreign language continuing airworthiness information and maintenance data are required to be available. Appendix and Supplements amended to reflect the changes to Chapter A8-20 described above. Also corrections have been made to replace some permissive clauses with mandatory clauses; and update superseded references and names of CAA Departments.
A8-21	Paragraph 1 and Note 1: Reference to 'Regulation (EC) No. 1592/2002' replaced by 'Regulation (EC) No. 216/2008'.

Introductory Note to Sub-Section A8	<p>Group category A1, A2, E1 and E2 Notes amended to reflect that the CAA will accept applications from manufacturers of microlight aircraft for A8-1, A8-2, and A8-8 approvals.</p> <p>Group category A1 (Design and Production Organisations) deleted as no longer valid.</p> <p>Group category 'A2' (Production Organisations) renamed 'POA'</p> <p>Group category A3 (Consortium Management Organisations) deleted as no longer valid.</p> <p>Group category 'E1' (Design Organisations) renamed 'DOA'.</p> <p>Group category E4 and M5 definitions amended to reflect A8-20 approvals.</p> <p>Group category F4 (Organisations) amended to reference 'Chapter A8-9'.</p> <p>Group category G1 (Flight Testing) deleted as no longer valid.</p> <p>Group Category QE 'Qualified Entity' added to reference A8-22 approvals.</p>
<p>A8-9</p> <p>Appendices 1 and 2 to A8-9</p> <p>Appendix 3 to A8-9</p> <p>Appendix 4 to A8-9</p>	<p>Relevant group categories added against the title for clarity and consistency with other Sub-Section A8 Chapters.</p> <p>Paragraphs pertaining to G1 approvals removed as no longer valid, and subsequent paragraphs renumbered and cross-references updated.</p> <p>Paragraph 3.1 and 3.2 amended to update references to material that has been superseded.</p> <p>Cross-references to paragraphs in Chapter A8-9 updated.</p> <p>Cross-references to paragraphs in Chapter A8-9 updated, references to superseded material updated and address to submit applications amended.</p> <p>Appendix deleted as no longer valid.</p>
A8-19	Chapter deleted as no longer valid.
<p>A8-20</p> <p>A8-20 Supplement 4</p>	<p>Relevant group categories added against the title for clarity and consistency with other Sub-Section A8 Chapters.</p> <p>Paragraph 1.6 d) amended to remove duplication of the word 'engines'.</p>
A8-21	Relevant group categories added against the title for clarity and consistency with other Sub-Section A8 Chapters
A8-22	<p>Relevant group category added against the title for clarity and consistency with other Sub-Section A8 Chapters.</p> <p>Paragraph 13.1 c) reworded for clarity.</p>

NOTE: In addition to the above changes, the first page of some of the Sub-Section A8 Chapters has been reissued to include a minor format change for consistency with other Sub-Section A8 chapters; these pages do not contain any technical changes. The chapters affected are A8-1, A8-2, A8-3, A8-6, A8-8, and A8-18.

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Foreword

1 Effects of EASA

The following procedural requirements are applicable to all those aircraft and products for which British Civil Airworthiness Requirements are NOT superseded by Regulation (EC) No. 216/2008 of the European Parliament and of the Council of 20 February 2008, or any Implementing Rules made under that Regulation.

For those aircraft and products for which an EASA Type Certificate has been issued, EASA Implementing Rule Part 21 provides the relevant procedural requirements.

NOTE: The CAA interprets that these British Civil Airworthiness Requirements apply only to those aircraft:

- a) excluded from the EASA scope by Article 1 and Annex II of Regulation (EC) No. 216/2008; or
- b) those to which any derogation to national regulations applies under European Commission Regulation (EC) No. 1702/2003 "the Certification Regulation"; or,
- c) those to which any derogation to national regulations applies under European Commission Regulation (EC) No. 2042/2003 "the Continuing Airworthiness Regulation" established under Article 7 of the Regulation up until 28 September 2008.

2 Purpose

British Civil Airworthiness Requirements (hereinafter referred to as the "Requirements") of which Section A is a constituent part, are published by the Civil Aviation Authority (hereinafter referred to as the "CAA"). They comprise minimum requirements and constitute the basis for the issue of approvals and certificates required by the current Air Navigation Order (ANO).

3 General

- 3.1 The Civil Aviation Authority (Chicago Convention) Directions 2007, issued by the Department for Transport (DfT), require the Civil Aviation Authority (CAA) to ensure that it acts consistently with the obligations placed on the UK under the Convention on International Civil Aviation (Chicago Convention) of December 1944.

This document is published in support of the CAA's discretionary powers contained in the Air Navigation Order and includes requirements based on certain International Standards and Recommended Practices (SARPs) contained in Annexes to the Chicago Convention.

It is the policy of the CAA to have reference to this document when exercising the discretionary powers referred to above and, in particular, it will exercise those powers to ensure the effective implementation of any such requirements based on SARPs.

- 3.2 Compliance with the procedures in Section A is normally required. The CAA may accept proposals to vary the procedures in a particular case, provided such variations give, at least, an equivalent level of safety to that intended by the Requirements.
- 3.3 Section A contains Certification and Approval procedures for products, usually first certificated or approved by the CAA, for which the CAA has primary responsibility as the Authority of the State of Design. This responsibility is of particular significance in

relation to ensuring the continued airworthiness of the product in operation, whether in the UK or elsewhere.

NOTE: For products first certificated by an Authority other than the CAA, for which UK Certification or Approval is required, BCAR Section B contains Certification and Approval procedures. In this case, although the CAA has responsibilities under the ANO in relation to the operation of such products on the UK Register, certain primary responsibilities defined in ICAO Annex 8 are those of the Authority of the State of Design.

- 3.4 Major aviation products are increasingly those of collaboration between manufacturers of more than one country. Nevertheless it remains important, particularly in the context of continued airworthiness, that the primary responsibility be identified with one Authority. The Procedures of Sections A and B are intended to cover these circumstances.
- 3.5 Reflecting the collaborative nature of manufacture, the functions of the National Authorities are often also undertaken jointly or in collaboration. The provisions of Bilateral and Multilateral Agreements and Arrangements between nations on airworthiness matters have been developed more extensively and BCAR Sections A and B take account of the related procedures at least in principle; the details of these procedures have so far varied significantly according to the particular arrangements within which a project is undertaken.
- 3.6 **Supply of Material to the CAA.** Where, in compliance with the requirements, material (e.g. manuals, documents) is required to be sent to the CAA, the consignor shall ensure, before despatch, that he has paid, or has arranged to pay, all charges necessary to cover delivery of the material to the CAA Safety Regulation Group, at the address given at the end of this FOREWORD, without any charge to the CAA (Free Domicile).

4 Interpretation

- 4.1 The Requirements, with or without explanatory matter, should not be regarded as constituting a text book of current aeronautical knowledge. The interpretation of the Requirements against a background of such knowledge is essential.
- 4.2 Where necessary Appendices are supplied which provide acceptable interpretation of requirements, state recommended practices, or give additional information.
- 4.3 Some of the Chapters in Section A include Supplements which contain technical procedures applicable to the subjects in the associated Chapters.
- 4.4 Mandatory clauses are invariably denoted by the use of "shall" or "must"; "should" or "may" are used in the text to introduce permissive or recommended clauses.
- 4.5 Imperatives such as "ensure", "prevent" and "shall be designed", imply that the Applicant, before claiming compliance with the Requirement in question, will take all the steps that are deemed to be necessary in the light of the knowledge and techniques available at the time.
- 4.6 It is implicit in requirements expressed qualitatively (e.g. "readily visible", "adequately tested", etc.) that the CAA will adjudicate in cases where doubt exists.
- 4.7 Words purporting the masculine gender include the feminine.

5 Editorial Presentation

- 5.1 Section A is divided into eight Sub-Sections numbered consecutively. The Sub-Sections are further divided by subjects into Chapters, the numbering of each Chapter being associated with its Sub-Section (e.g. Sub-Section A2 contains Chapters A2-1, A2-2, etc.).
- 5.2 A list of the subjects and the numbers of the Chapters is given in the CONTENTS.
- 5.3 A system of progressive paragraph numbering is used, the number of digits being kept to a maximum of three by associating the system with paragraph headings. A paragraph heading applies to all succeeding paragraphs until another titled paragraph with the same, or a smaller number of digits occurs.

6 Amendment and Issue

- 6.1 The printed version of the Section, which is identified by an Issue No. and date (e.g. Issue 1 dated 1st July, 1989) will be deemed to be amended by each BCAR Amendment appropriate to the Section which is issued subsequent to the date of Issue of the printed version.

- 6.2 Material differences from the previous issue of each page are indicated with a marginal line.

- 6.3 The issue or revision date is shown at the bottom of each page.

The significance of the wording is as follows:

- a) **Date (in format dd Month yyyy)** – the first version to appear in the Section.
- b) **Revised (date)** – Revisions, indicated by marginal lines, have been introduced at the revision date.
- c) **Reissued (date)** – The text on the page has not changed from the previous issue or amendment, but the page has been reissued because of movement of text on the page.

NOTES: 1 In some instances although a Chapter has been revised and is annotated accordingly it may not have been necessary to make any amendment to its Appendix or Supplement, in such cases the Chapter and its Appendix or Supplement would bear different dates.

- 2 Pages that bear the issue date and the abbreviation 'corr.' indicate pages that have been corrected due to errors in the original issue.

7 Effective Date

New requirements and amendments promulgated in BCAR Amendments are effective from the date printed on them.

8 Applications and Enquiries

Applications for permission to reproduce any part of the Requirements and any enquiries regarding their technical content should be addressed to the CAA Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR, UK. This address should be used when requesting forms or when making applications for Certificates of Airworthiness, etc., and any services normally rendered by the Safety Regulation Group.

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Sub-section A1
General

Chapter A1-2 Categories of Aircraft

1 Introduction

The Certificate of Airworthiness or Permit to Fly imposes conditions affecting the manner in which an aircraft may be maintained and operated, and the purposes for which it may be used. The conditions are imposed in the following manner:

- a) By placing an aircraft in Categories which indicate the uses for which the aircraft is Approved;
- b) By indicating either in the Certificate of Airworthiness or Permit to Fly or in their associated documents the detailed limitations which must be observed.

2 Categories and Purposes

2.1 The categories in which an aircraft may be placed are as follows:

2.1.1 Certificates of Airworthiness

- a) Standard Category;
- b) Special Category.

2.1.2 Permit to Fly

NOTE: A Permit to Fly may be issued or validated in respect of an aircraft, in accordance with Articles 11 or 13 of the Air Navigation Order. The CAA shall refuse the issue of a permit to fly if it appears to the CAA that the aircraft is eligible and ought to fly under and in accordance with a certificate of airworthiness.

2.2 The purposes for which the aircraft may fly are as follows:

- a) **Standard Category:** Any purpose.
- b) **Special Category:** Any purpose, other than public transport, specified in the Certificate of Airworthiness but not including the carriage of passengers unless expressly permitted.
- c) **Permit to Fly:** Any purpose, other than public transport or unless expressly permitted aerial work, specified on the Permit to Fly.

NOTE: The Air Navigation Order Article 8(2)(e) restricts an aircraft in the respect of which a Permit to Fly has been issued to flights beginning and ending in the United Kingdom. The CAA may consider granting an exemption under Article 153 from this part of the Order.

Flights over or into another country by an aircraft in respect of which either a Special Category Certificate of Airworthiness or a Permit to Fly has been issued and, in the case of a Permit to Fly, an exemption has been granted, will normally require the permission of the Authority of that country.

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Chapter A1-3 Certification of Collaborative Projects

1 General

- 1.1 This Chapter is intended to establish the principles governing the procedures for the initial and continuing airworthiness of a project for which the CAA has a primary responsibility for initial type Approval (see Note) but where the design is being undertaken by more than one Organisation, within or outside the United Kingdom.
- 1.2 The corresponding Chapter of Section B deals with such a collaborative project for which the CAA has no responsibility for initial type Approval.
- 1.3 The CAA requires that primary responsibilities for airworthiness aspects of design and manufacture and for continued airworthiness be identified.

NOTE: Initial type Approval may be undertaken jointly by several Airworthiness Authorities, each of whom will have a primary responsibility. Procedures by which Authorities will deal jointly with certifications are not defined in this Chapter A1-3.

2 Design Responsibility

- 2.1 In a collaborative project, contributions to design may be made by a number of participating Organisations in the UK or elsewhere. However, one Organisation Approved by the CAA shall be responsible for the total design of the aircraft and for demonstrating to the CAA compliance with the airworthiness requirements specified by the CAA. This Organisation shall be known as the Type Design Organisation for the project and the airworthiness procedures to be followed by the Type Design Organisation are defined in this Chapter A1-3. The UK Type Certificate Holder, in order to carry out his responsibilities shall be, or shall have access to, the Type Design Organisation.
- 2.2 The Type Design Organisation shall submit to the CAA for Approval a detailed description of the total Design Organisation for the project including:
- a) the management of the design of the project;
 - b) the responsibilities of the various contributing Organisations;
 - c) the means by which the Type Design Organisation will submit to the CAA reports substantiating compliance with the applicable airworthiness design requirements.

3 Manufacturing Responsibilities

- 3.1 In a collaborative project, contributions to manufacture e.g. components of the total aircraft, may be made by a number of Organisations in the UK or elsewhere and these Organisations may be different from those undertaking the design of the aircraft. However, one Organisation acceptable to the CAA shall be responsible for the assembly of the total aircraft such that it qualifies by virtue of its demonstrated conformity with the Approved design, for a UK Certificate of Airworthiness. This person or Organisation shall be known as the Aircraft Manufacturer and the relevant airworthiness procedures to be followed by the Aircraft Manufacturer are defined in this Section A.

- 3.2 The Aircraft Manufacturer shall submit to the CAA a detailed description of the total manufacturing Organisation for the project including:
- a) the management of the manufacture of the project;
 - b) the responsibilities of the various contributing Organisations;
 - c) the means by which the Aircraft Manufacturer will demonstrate to the CAA compliance with the relevant requirements including those governing conformity to the Type Design and Quality Assurance.

4 Continued Airworthiness Responsibility

- 4.1 Chapter 4 of ICAO Annex 8 places responsibility for transmitting continued airworthiness information upon the State of Design. In a collaborative project, the State of Design is represented by the Airworthiness Authority of the country in which the Company having jurisdiction over the Aircraft Design Organisation is located.
- 4.2 Where the CAA is the authority of the State where the Type Design Organisation is located its requirements for the discharge of responsibilities are set out in this Section A.
- 4.3 Where the CAA is not the Authority of the State where the Type Design Organisation is located, regardless of the fact that a design contribution is being made from the United Kingdom, the CAA's requirements for the discharge of responsibilities for Continued Airworthiness are set out in Section B.
- 4.4 The Type Design Organisation and the Aircraft Manufacturer shall submit to the CAA a detailed description of the means by which they will meet the CAA's requirements for continued airworthiness for the project and will provide suitable undertakings to ensure that such requirements are met throughout the life of the product.

Chapter A1-4 Specifications - Materials

- 1** Materials used in parts affected by airworthiness requirements shall comply with one of the following specifications:
 - a) British Standards Aerospace series;
 - b) European Aerospace Standards prepared by AECMA under the auspices of CEN;
 - c) Aerospace standards prepared by a foreign national standards office that are recognised as such by the local airworthiness authority, and a BASA exists between the UK and the state in which the standard was issued;
 - d) Specifications approved by the CAA;
 - e) Specifications prepared for material by an appropriately approved Design Organisation where the material is to be used in a part designed within the terms of the design approval.

- 2** Application for approval of a type of specification detailed in paragraph 1 c) shall be addressed to the CAA Safety Regulation Group and two copies of the specification shall be sent.

- 3** A specification submitted for approval shall, according to the material concerned, include such of the following information as is appropriate:
 - a) An identity or reference number, issue number and date;
 - b) A title describing the material;
 - c) The quality and/or chemical composition of the material;
 - d) The mechanical and/or physical properties of the material;
 - e) The method of determining the mechanical and/or physical properties of the material;
 - f) Particulars of defects which render the material unsuitable;
 - g) Particulars of heat treatment and/or other manufacturing processes;
 - h) A table of manufacturing tolerances;
 - i) Particulars of such markings which will ensure identification of the material.

- 4** A specification will be approved if the CAA accept that the material complies with such a specification having the essential properties assumed by the design in the associated technical investigation.

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Sub-section A2

Approval of Type Design

Chapter A2-2 Type Certification

1 Introduction

- 1.1 A Type Certificate issued by the CAA constitutes a statement that the design of the aircraft type to which the Certificate refers and of the variants specified on the Data Sheet has been Approved by the CAA.

NOTE: When a Type Certificate has been issued all aircraft of a similar type would qualify for a Certificate of Airworthiness provided the condition of the aircraft concerned was acceptable to the CAA.

2 Scope of Application of the Type Certificate

- 2.1 The issue of a Type Certificate is a prerequisite to the issue of a Certificate of Airworthiness for a Prototype or a Variant.

NOTES: (1) This Requirement (which was first introduced 1st January, 1968) will not apply to aircraft for which Special Category Certificates of Airworthiness are issued.

- (2) With the agreement of the CAA this Requirement may be waived for a single aircraft for which a Certificate of Airworthiness has been issued in categories other than the special Category (see Chapter A1-2) provided there is no intention to construct series aircraft or to export the particular aircraft.

3 Initial Procedure for Obtaining the Type Certificate

- 3.1 The application for the issue of a Certificate of Airworthiness on CA Form 3 (see Chapter A3-2) will also serve as an application for a Type Certificate. No separate application will be needed. Where the Applicant is not seeking the issue of a Certificate of Airworthiness, application shall be made by letter to the CAA for the issue of a Type Certificate, and such a letter shall include an undertaking that the Applicant will pay the CAA costs.

4 Description of the Type Certificate

- 4.1 With the co-operation of the Applicant, the CAA will prepare and issue the Type Certificate together with the associated Data Sheet.

- 4.2 The Type Certificate will contain the following information:

- a) The designation of the type;
- b) A statement that the type of aircraft concerned is acceptable for United Kingdom airworthiness certification;
- c) A reference to the associated Type Certificate Data Sheet.

- 4.3 A new Type Certificate will be issued when major changes are incorporated which affect the basic design.

5 The Type Certificate Data Sheet

- 5.1 The Type Certificate Data Sheet associated with the Type Certificate will give the basis of certification and the designation of each aircraft variant investigated, and also define some general particulars of the design.

6 Distribution of Type Certificates and Data Sheets

- 6.1 The Type Certificate and Data Sheet will be issued to the Type Design Organisation.
- 6.2 Copies of Type Certificates and Data Sheets may be obtained from the CAA.

Chapter A2-3 Flight Testing for Type Certification

1 General

- 1.1 The flight testing of Prototype aircraft under investigation for the issue of a Certificate of Airworthiness (see paragraph 2) shall comply with the procedures set out in this Chapter A2-3, as follows:

NOTE: Owners are required to arrange adequate insurance to cover damage to the aircraft and to third parties (see Airworthiness Notice No. 66).

- 1.2 In order that the CAA may accept reports on flight test matters, the qualifications and experience of personnel involved in flight testing under the provisions of this Chapter shall be acceptable to the CAA. Flight test personnel shall be provided with adequate facilities and equipment for the effective performance of their duties.

NOTE: Organisations approved in accordance with A8-9 to fly aircraft under 'B' Conditions of the Air Navigation Order comply with this requirement.

2 Prototype Aircraft

The requirements and procedures of this paragraph 2 are applicable where application is made for the issue of a United Kingdom Certificate of Airworthiness or Permit to Fly in respect of a type for which a United Kingdom Type Certificate, Certificate of Airworthiness, Type Approval or Permit to Fly, as appropriate (see A2-2 or A3-7 as appropriate), has not previously been issued.

2.1 General

All matters connected with the requirements of this paragraph 2 shall be under the supervision of an Organisation approved for the appropriate purpose by the CAA. In this paragraph 2 the term "the Applicant" shall be taken to indicate such an Organisation.

2.2 Preparation

- 2.2.1 At an early stage of design the Applicant shall provide a General Assembly drawing of the aircraft and an Engine Type Certificate Data Sheet or equivalent details if the Engine Type Certificate Data Sheet is not available, together with a description of any unusual design features. Certain features of the aircraft (e.g. pilot's view, accessibility of cockpit controls) shall be demonstrated to the CAA using a 'mock-up' or other acceptable representation of the aircraft.

- 2.2.2 The provision of special equipment which may be required for purposes of the flight trials, e.g. safety harnesses, parachute stowages, emergency exits, anti-spin parachutes, instrumentation, and the means for overriding or disconnecting automatic devices, shall be discussed with the CAA at such a stage as will enable the appropriate action to be taken during the design and construction stages of the aircraft.

2.3 Airworthiness Acceptance Trials

- 2.3.1 The Airworthiness Acceptance Trials will normally commence after the completion of the aircraft manufacturer's development and preliminary flight testing.
- 2.3.2 The aircraft shall, in all relevant respects, be in a condition fully representative of the Type when the Airworthiness Acceptance Trials are carried out. A statement

identifying the design standard at the commencement of these trials shall be given to the CAA, together with details of any significant variations in the design from that originally advised. The statement shall include sufficient detail to identify the design and modification state of the aircraft, and shall include all limitations, including temporary limitations, applicable to the trials.

- a) Any design changes made to the aircraft during the Airworthiness Acceptance Trials (e.g. incorporation of modifications, adjustments to powerplant, control surfaces and general rigging) shall be notified to the CAA, and the statement shall be amended, as necessary, to reflect the development state of the aircraft. Both the original statement and each amendment thereto shall be dated and signed by the Applicant.
- b) Where any design change renders a previous flight test invalid, the flight test concerned shall be repeated.

2.3.3 The Applicant shall submit for approval a flight test schedule, containing details of the proposed flight tests to be included in the Airworthiness Acceptance Trials. This schedule shall include the flight tests necessary:

- a) to establish compliance with the appropriate airworthiness requirements;
- b) to provide information for inclusion in the documents associated with the Certificate of Airworthiness, or permit to fly.

NOTE: The CAA may require alterations to the flight test schedule, and may also require additional tests not included in the schedule if it appears that such tests are necessary to establish the airworthiness of the aircraft type.

2.3.4 At a reasonable time before the commencement of the Airworthiness Acceptance Trials, the Applicant shall provide the following information and shall notify any subsequent alterations thereto.

- a) A summary of the predicted aerodynamic characteristics and the results of preliminary flight tests which require to be checked during the Airworthiness Acceptance Trials (stalling speeds, control force characteristics, aircraft response etc.);
- b) Such aircraft performance estimates or preliminary results as the CAA may require;
- c) A statement indicating the airworthiness conditions and the type of operations with which it is proposed to establish compliance. As appropriate to the capability and intended use of the aircraft this statement shall include, but may not necessarily be confined to, information concerning:
 - i) category(ies), e.g. aerobatic;
 - ii) performance group(s);
 - iii) weight/c.g. envelope;
 - iv) flight in non-temperate conditions;
 - v) flight in icing conditions;
 - vi) instrument flight;
 - vii) flight by night;
 - viii) use of oxygen;
 - ix) use of cabin pressurisation;
 - x) speed limitations;

- xi) carriage of external loads;
 - xii) search and rescue.
- d) Details of the special instruments fitted to the aircraft for the purpose of the Airworthiness Acceptance Trials;
 - e) Details of the aerodromes, atmospheric conditions, aircraft weights and other relevant details relating to the proposed test conditions for the Airworthiness Acceptance Trials;
 - f) Details, by reference, or in full, as applicable, of the methods of correction of flight test results;
 - g) Such other information as the CAA may require, e.g. flight test techniques, methods of instrument calibration, methods of presentation of flight test results, and the methods of preparation of handling and performance information.
- 2.3.5 The Applicant shall provide the CAA with adequate opportunities:
- a) to become familiar with the aircraft prior to the Airworthiness Acceptance Trials;
 - b) to participate in these trials;
 - c) to make flight test assessments during or after the Airworthiness Acceptance Trials; and
 - d) to gain information for use in preparing Airworthiness Flight Test Schedules (see A3-3).
- 2.3.6 The Applicant shall give reasonable notice to the CAA of the date on which it is proposed to commence the Airworthiness Acceptance Trials.
- 2.3.7 The Applicant's test pilots, flight and maintenance crews, and observers, who have been associated with the aircraft during the preliminary flight trials should, wherever possible, continue to be engaged in the same capacity until the Airworthiness Acceptance Trials are completed.
- 2.3.8 The aircraft shall be tested in accordance with the approved flight test schedule.
- 2.3.9 The speeds to be used in the performance tests shall be specified and shall be compatible with those obtained during the handling tests.
- 2.3.10 As the Airworthiness Acceptance Trials proceed the Applicant shall provide the CAA with flight test reports which, when all the trials are completed, will give full particulars and results of all tests specified in the flight test schedule. The flight test reports shall bear a reference number and shall include the following particulars in respect of each test:
- a) The purpose of the particular test, indicating the relevant Requirement(s) with which compliance is to be established;
 - b) The relevant test conditions (e.g. loading and configuration of the aircraft, atmospheric and weather conditions);
 - c) A description of the technique used for the test;
 - d) The relevant behaviour of the aircraft when subjected to the test;
 - e) The readings taken during the test together with the corrected results;
 - f) The conclusions drawn from the test, including compliance claimed.

2.4 **Total Flying Before Certification**

- 2.4.1 The minimum number of flying hours to be completed before certification (which will normally include a period of flying representative of operational use) shall be agreed with the CAA. In reaching agreement, account will be taken of the design features of the aircraft, and credit may be given for flying completed in the course of development and during the Airworthiness Acceptance Trials.
- 2.4.2 The period of operational flying is required to demonstrate that the aircraft is suitable for operation over representative routes; this flying and the associated maintenance should, wherever possible, be carried out by an Operator's own flying and maintenance crews. The CAA shall be consulted before the commencement of this flying, so that a suitable programme may be agreed and arrangements may be made for the CAA to participate. A substantial proportion of this flying shall be completed by a single aircraft.
- 2.5 The aircraft shall be held at the disposal of the CAA for the repetition of any of the scheduled flight tests or for the completion of any additional tests which the CAA may consider to be necessary for the purposes of type certification.

Chapter A2-4 Type Certification of a Variant

1 Introduction

- 1.1 A variant is an aircraft which embodies certain design features, dissimilar to the prototype aircraft, which are required to be investigated for certification purposes.
- 1.2 The issue of a Certificate of Airworthiness to a variant will be subject to compliance with the procedures outlined in this Chapter A2-4.
- 1.3 In the case of a variant to be investigated for the issue of a Certificate of Airworthiness in the Special Category, the CAA may accept proposals which would vary the procedures in this Chapter A2-4.
- 1.4 Before the issue of a Certificate of Airworthiness in the Transport, Aerial Work, or Private Category (see A1-2 for 'Categories') all aircraft must qualify for a United Kingdom Type Certificate. The procedures for type certification are given in A2-2 and those for the issue of a C of A in A3-2.

NOTE: A Type Certificate is not normally required for an aircraft to be certificated in the Special Category.

2 Application

- 2.1 Form CA 3, copies of which may be obtained from the CAA Safety Regulation Group, shall be completed at an early stage of the design of the aircraft, and returned to the same address, together with the appropriate deposit, as detailed in the form.
- 2.2 The charges are prescribed in the CAA Scheme of Charges and also noted on Form CA 3. Subject to the payment of a minimum charge equivalent to that for a series aircraft, the Applicant shall pay a charge equal to the cost of the investigation. During the course of the investigation the CAA will normally render accounts at monthly intervals.
- 2.3 During the investigation, if it is necessary for a CAA Surveyor to travel outside the United Kingdom, or away from the residential area of an overseas office of the CAA Safety Regulation Group, the CAA will require the Applicant to meet the additional costs involved.

3 Design

- 3.1 The Applicant shall, through the medium of an Organisation approved by the CAA for the purpose (see Sub-section A8), ensure that:
 - a) the design of the aircraft is similar in every respect to that of an aircraft which has already been issued with a Certificate of Airworthiness, with the exception of the proposed modifications;
 - b) the proposed modifications are such that the design of the aircraft, when modified, satisfies the requirements which the CAA may notify to the Applicant in writing.
- 3.2 All relevant design information, drawings and test reports shall be held at the disposal of the CAA. No such design records shall be destroyed without authorisation from the CAA.

- 3.2.1 Each design drawing shall bear a descriptive title, drawing number, issue number, and date of issue. All alterations to drawings shall be made in accordance with a drawing amendment system such as will ensure amendment to design records.
- 3.2.2 Immediately an alteration is made to a drawing, whether the alteration is permanent or temporary, the drawing shall be identified with a new issue number and date. Where an alteration affects the interchangeability of an item in any way, a new part number shall be issued such as to avoid confusion with the original item.
- 3.3 The Applicant's approved Organisation shall forward to the CAA a Certificate of Design, signed by an approved signatory of the particular Organisation, and worded in the following form:

CERTIFICATE OF DESIGN (VARIANT)

Aircraft Designation

Registration Marks

Manufacturer's Serial Number of Aircraft
.....

Certificate of Airworthiness Categories

Performance Group

Engine(s) Type

I Certify that, with the exception of the modifications enumerated below, the design of the above aircraft is similar in every respect to that of aircraft, Manufacturer's Serial Number
.....

Modifications

I further certify that with the exceptions stated below, the aircraft, Manufacturer's Serial Number is of a design which complies with British Civil Airworthiness Requirements current on (date)..... and with such additional requirements as have been notified by the CAA, as applying to this aircraft, which are referenced below.

Exceptions

Additional requirements

Signed

Firm.....

CAA Approval Ref No.

- 3.4 The Applicant's approved Organisation shall prepare an Addendum to the Type Record. The Addendum shall contain particulars of design changes together with all consequent changes to the information under each heading of the relevant Type Record. A copy of the Addendum, when completed, shall be forwarded to the CAA.

4 Construction

- 4.1 The aircraft shall be constructed under the supervision of an Organisation approved by the CAA for the purpose (see Sub-section A8). Before any part of the aircraft is finally certified, the approved Organisation shall be satisfied that the work has been carried out, inspected, and tested where necessary, for conformity with the specifications, drawings and instructions relating to the approved design.
- 4.2 During the course of construction and of airworthiness acceptance testing, including flight testing (see A2-3), the aircraft shall be made available to enable the CAA to inspect it as necessary.
- 4.3 All relevant inspection records shall be made available to the CAA for examination, and these shall not be destroyed without authorisation from the CAA.

5 General

- 5.1 The aircraft shall be weighed, and copies of the Weight and Centre of Gravity Schedule and, where appropriate, the Weight and Balance Report shall be provided (see A5-4).
- 5.2 A Certificate of Clearance (see A8-9) shall be issued, and the aircraft shall be tested in flight to schedules approved by the CAA in accordance with A2-3.

6 Manuals

- 6.1 Particulars for inclusion in the Flight Manual shall be provided (see A7-2).
- 6.2 Copies of the Maintenance, Overhaul and Repair Manuals (see A5-3), and the Crew Manual (see A7-3), shall be provided.

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Chapter A2-5 Approval of Modifications

1 Introduction

- 1.1 **Modifications.** Modifications are changes made to a particular aircraft, including its components, engines, propellers, radio apparatus, accessories, instruments, equipment, and their installations. Substitution of one type for another when applied to components, engines, propellers, radio installations, accessories, instruments and equipment, is also considered to be a Modification. The approval of Modifications will be subject to compliance with the procedures outlined in this Chapter A2–5, but reference should also be made to the particular modification procedures for engines in Chapter A4–2, propellers in Chapter A4–4, accessories and equipment in Chapter A4–8, and radio apparatus in Chapter A4–10.

2 Modifications Not Previously Investigated and Approved by CAA

2.1 General

- 2.1.1 At an early stage of the design of a Modification brief particulars shall be provided to the CAA, Safety Regulation Group, so that the Modification may be classified.
- 2.1.2 A Modification will be classified as Minor or Major in accordance with the airworthiness significance of the Modification. Where the investigation indicates that the particulars given in the Type Certificate Data Sheet, Flight Manual or other approved documents, will need amendment (even though no physical change to the aircraft is involved) the CAA may require Major Modification procedure to be followed where the amendments are significant.
- 2.1.3 Where the Modification is such that the CAA requires the aircraft to be investigated as a Variant, the procedures of Chapter A2–4 will apply.
- 2.1.4 All modifications, excepting those which are agreed by the CAA to be of such a nature that airworthiness is not affected, shall be approved through the modification procedures of an appropriately approved Organisation, or in some circumstances, by the CAA directly.
- 2.1.5 The Applicant shall ensure, where necessary through the medium of an Organisation approved by the CAA for the purpose (see Sub-Section A8), that the proposed Modification is such that the design of the aircraft, when modified, complies with:
- a) the Requirements in force at the time the aircraft type was originally certificated;
 - b) such other requirements as the CAA may notify, in writing, in respect of the aircraft design.
- The Applicant shall, when making these statements, further ensure that the Modification is compatible with all defined aircraft build standards for which the Modification is to be incorporated, or that any incompatibilities are identified.
- 2.1.6 All relevant design information, drawings and test reports shall be held at the disposal of the CAA. No such design records shall be destroyed without authorisation from the CAA.
- 2.1.7 Each design drawing shall bear a descriptive title, drawing number, issue number and date of issue. All alterations to drawings shall be made in accordance with a drawing amendment system such as will ensure amendment to design records.

- 2.1.8 Immediately an alteration is made to a drawing, whether the alteration is permanent or temporary, the drawing shall be identified with a new issue number and date. Where an alteration affects the interchangeability of any item in any way, a new part number shall be issued such as to avoid confusion with the original item.
- 2.1.9 Modification documents shall bear a modification reference number, issue number and date, a description of the modification, together with a list of parts and assemblies affected by the modification and, where necessary, drawings giving particulars of the parts before and after modification.
- 2.1.10 Where modifications affect unit interchangeability, or are of such an extent as to require amendment of approval documents or any documents associated with the Certificate of Airworthiness, a separate type or designation reference shall be allocated to the modified unit.
- 2.1.11 Where modifications affect or impinge upon the content of the approved Master Minimum Equipment List (MMEL), Applicants will be required to ensure that notification of these effects is provided to the CAA so that the necessary action can be taken to revise the relevant MMEL.
- 2.2 **Major Modifications.** The following procedures will apply in the case of a modification classified by the CAA as a Major modification.
- 2.2.1 CAA Form AD 282, copies of which may be obtained from the CAA Safety Regulation Group, shall be completed and returned to the same address. The total fee will be based on the cost of the investigation and the CAA will, during the course or upon completion of the investigation, notify the Applicant in writing accordingly.
- 2.2.2 The CAA may require a Certificate of Design, which shall be signed by an approved signatory of an appropriately approved Organisation. The Certificate shall be worded as follows:

| **Please see example over page.**

CERTIFICATE OF DESIGN (MODIFICATION)

Aircraft Designation

Registration Marks

Manufacturer's Serial Number of Aircraft

.....

Certificate of Airworthiness Categories

.....
.....

Performance Group

Engine(s) type

I hereby certify that the Modification(s) listed below, define all of the changes associated with this certificate.

Modification(s)

.....
.....
.....

I further certify, that, with the exceptions listed below, the design of the above Modification complies with the requirements specified by the CAA as the certification basis for this type of aircraft and with any additional requirements notified by the CAA in respect of the particular modification.

Exceptions

.....
.....
.....

Signed

Firm

CAA Approval Ref No.

Date

- 2.2.3 The CAA may require an addendum to the Type Record to be prepared by an approved Organisation. The addendum shall contain particulars of design changes made and all consequent changes to the information given under each heading of the relevant Type Record.
- 2.2.4 The CAA will signify approval of a Major Modification by forwarding a copy of the Airworthiness Approval Note to the Applicant.
- 2.2.5 The approved Organisation is responsible for the continued airworthiness of the modification and shall undertake the functions of Chapter A5-1 sub-paragraphs 1.1 c), d), e) and f) with respect to the Modification.

- 2.3 **Minor Modifications.** When the design of a modification, classified as Minor, is undertaken by other than an approved Organisation, the CAA will signify approval by forwarding a copy of CAA Form AD 261 to the Applicant.
- 2.4 **Civil Modification Record.** When the design of a modification is undertaken by an approved Organisation, a record of the following particulars shall be prepared and kept in a book or folder bearing the title 'Civil Modification Record':
- a) Aircraft type;
 - b) Title and brief description of modification;
 - c) Modification reference number;
 - d) Modification class;
 - e) Airworthiness Approval Note number (in the case of a Major modification);
 - f) Reference to the associated Flight Manual amendment number;
 - g) Reference to the associated Maintenance, Overhaul and Repair Manuals, Crew Manual and Maintenance Schedule amendment numbers;
 - h) Reference to the associated MMEL revision (if appropriate).
- 2.4.1 The Civil Modification Record shall be made available to the CAA for examination.

3 Modifications Already Approved

- 3.1 Information concerning the conditions of acceptance of modifications previously approved by the CAA will not be confidential to the Applicant and may be made available by the CAA on request. This does not apply to design information, including drawings and test reports; these are held, by the CAA, as confidential documents.

4 CAA Airworthiness Directives

- 4.1 Modifications considered essential for airworthiness (Mandatory Modifications), will be promulgated as CAA Airworthiness Directives. Where appropriate, consultation with the Organisation and the aircraft operators with regard to compliance dates, limiting flying hours, cycles, or details relating to the action prescribed, will be undertaken. In making these decisions the degree of urgency and availability of modified parts will be taken into account.

NOTE: Modifications classified as essential for airworthiness and promulgated by the CAA as Airworthiness Directives will be contained in the CAA publication CAA ADs Volume 1 and Volume 2. Details will be given in Airworthiness Notice No. 6. Until such time as this is published, CAA Publication CAP 476, Mandatory Modifications and Inspection Summary should be used.

Chapter A2-7 Type Approval

1 Introduction

- 1.1 This Chapter A2-7 describes the application for Type Approval of a Series manufactured civil aircraft that is intended to qualify for the issue of a Permit to Fly under Chapter A3-7. It should be noted that, except in the case of a microlight aeroplane or a light gyroplane (a light gyroplane being within the eligibility criteria of BCAR Section T), the CAA will not normally accept an application for Type Approval.
- 1.2 An aircraft conforming to a type approved design may qualify for the issue of a Permit to Fly as a Series aircraft (being an aircraft which in the opinion of the CAA, conforms in all matters affecting airworthiness to a design in respect of which Type Approval has been granted) under paragraphs 3.1 b) and 4.1 of Chapter A3-7.

2 Application

- 2.1 For Type Approval, application shall be made in writing to the Civil Aviation Authority, Safety Regulation Group, Applications and Approvals Department. The application shall include a brief description of the aircraft and agreement to pay any CAA charges incurred.
- 2.2 Where application is to be made to the CAA for a Type Approval, Form SRG 1701 shall be completed at an early stage of the project, and returned with the appropriate deposit. Form SRG 1701 can be obtained from the Civil Aviation Authority, Safety Regulation Group, Applications and Approvals Department or alternatively, can be completed online via the CAA website at www.caa.co.uk/SRG1701.
- 2.3 The charges are prescribed in the CAA Scheme of Charges. The Applicant shall pay charges equal to the cost of the investigation, but not exceeding the amount prescribed in the CAA Scheme of Charges for Airworthiness, Noise Certification and Aircraft and Aircraft Engine Emissions, contained in Official Record Series 5 and available via the CAA website at www.caa.co.uk/ORS5. During the course of the investigation, the CAA will normally render accounts at monthly intervals.
- 2.4 During the investigation, if it is necessary for a CAA Surveyor to travel outside the United Kingdom, the CAA will require the Applicant to meet the additional costs involved.

3 Design Basis

- 3.1 The Applicant, through the medium of an organisation approved by the CAA (See Sub-section A8, Approvals), shall indicate the basis on which they propose the CAA should decide whether the design of the aircraft qualifies for the issue of a Type Approval. The basis would normally be that the aircraft is of a design that satisfies a code of airworthiness requirements agreed by the CAA as being suitable for the purpose.

4 Design Substantiation

- 4.1 Where the application is for a Type Approval (of a civil aircraft for Series manufacture), evidence of compliance with the basis of paragraph 3.1 of this Chapter A2-7 shall be provided. Where an organisation within the UK is responsible for the aircraft design,

evidence that the design satisfies the specified code of airworthiness requirements will normally be submitted by a person approved for the purpose by the CAA. Where an organisation outside the UK is responsible for the aircraft design, evidence that the design satisfies the specified code of airworthiness requirements will be submitted by a person considered suitable for the purpose by the CAA.

5 Standard of Construction

- 5.1 The applicant shall satisfy the CAA that the construction of the aircraft conforms with the specifications, drawings and instructions (including those for testing and inspection), which comprise the design accepted in accordance with the preceding sections of this Chapter A2-7.
- 5.2 During the course of construction and of airworthiness acceptance testing, including flight testing (see Chapter A3-7, paragraph 6), the aircraft shall be made available to enable the CAA to survey it as necessary.
- 5.3 All relevant inspection records shall be made available to the CAA for examination, and these shall not be destroyed without authorisation from the CAA.

6 General

- 6.1 The aircraft shall be weighed, and copies of the weight and centre-of-gravity report shall be provided.
- 6.2 Particulars for inclusion in the flight manual or pilot's operating handbook shall be provided.

Sub-section A3
Certificates of Airworthiness and Other
Provisions for Legal Flight

Chapter A3-2 Issue of Certificates of Airworthiness

1 Introduction

- 1.1 A Prototype Aircraft is an aircraft of a new design which is the first of the type to be investigated for the issue of a United Kingdom Certificate of Airworthiness.
- 1.2 A Variant Aircraft is the first aircraft on the register to embody changes to the type designation which requires an amendment to the information in the Type Certificate Data Sheet.
- 1.3 A Series Aircraft is an aircraft, including engines and equipment, the design of which is similar in every essential respect to the design of an aircraft for which a United Kingdom Certificate of Airworthiness has previously been issued.
- 1.4 The issue of a Certificate of Airworthiness is dependent on the aircraft being registered in the United Kingdom and will be subject to compliance with the procedures outlined in this Chapter A3-2.
- 1.5 In the case of aircraft to be investigated for the issue of a Certificate of Airworthiness in the Special Category, the CAA may accept proposals which vary the procedures in this Chapter A3-2.
- 1.6 Before the issue of a Certificate of Airworthiness in the Transport, Aerial Work, or Private Category (see A1-2 for 'Categories'), aircraft must qualify for a United Kingdom Type Certificate. The procedures for type certification are given in A2-2.

NOTE: A Type Certificate is not normally required for an aircraft to be certificated in the Special Category.

2 Application

- 2.1 Form CA 3, copies of which may be obtained from Civil Aviation Authority, Safety Regulation Group, Applications and Certification Section, Aviation House, Gatwick Airport South, W Sussex RH6 0YR, shall be completed at an early stage, and returned to the same address, together with the appropriate fee, as detailed in the CAA Scheme of Charges.
- 2.2 The Applicant shall pay charges equal to the cost of the investigation, but not exceeding the amount prescribed in the CAA Scheme of Charges. During the course of the investigation the CAA will normally render accounts at monthly intervals.
- 2.3 During the investigation, if it is necessary for a CAA Surveyor to travel outside the United Kingdom, or away from the residential area of an overseas office of the CAA Safety Regulation Group, the CAA will require the Applicant to meet the additional costs involved.

3 Design for New Aircraft (Prototype or Variant)

- 3.1 The Applicant shall, through the medium of an Organisation approved by the CAA for the purpose (see Sub-section A8 or JAR-21), ensure that:
 - a) the Requirements in force, at the time the application for a Certificate of Airworthiness is received by the CAA, are satisfied;

- b) such other Requirements, relating to the aircraft design, as the CAA may notify in writing, are satisfied.
- 3.2 All relevant design information, drawings and test reports shall be held at the disposal of the CAA. No such design records shall be destroyed without authorisation from the CAA.
- 3.2.1 Each design drawing shall bear a descriptive title, drawing number and date of issue. All alterations to drawings shall be made in accordance with a drawing amendment system such as will ensure amendment to design records.
- 3.2.2 Immediately an alteration is made to a drawing, whether the alteration is permanent or temporary, the drawing shall be identified with a new issue number and date. Where an alteration affects the interchangeability of an item in any way, a new part number shall be issued such as to avoid confusion with the original item.
- 3.3 The Applicant’s Approved Organisation shall forward to the CAA a Certificate of Design, signed by an Approved signatory of the particular Organisation, and worded in the following form:

CERTIFICATE OF DESIGN (PROTOTYPE OR VARIANT)

Aircraft Designation

Registration Marks

Manufacturer’s Serial Number of Aircraft

Certificate of Airworthiness Categories

.....

Performance Group

Engine(s) type

I certify that, with the exceptions stated below, the above aircraft is of a design which complies with British Civil Airworthiness Requirements/Joint Aviation Requirements current on (date) and with such additional requirements as have been notified by the CAA as applying to this aircraft, which are referenced below.

Exceptions

.....

Additional requirements

.....

Signed

Organisation.....

CAA Approved Ref. No

Date

- 3.4 The Applicant’s Approved Organisation shall submit to the CAA a Type Record containing a summary of the aircraft design. The information given in the Type Record shall be consistent with the evidence on which compliance with the CAA requirements is claimed, and shall include the following information and such additional information as the CAA may require in any particular case:

- a) A three-view general arrangement drawing of the aircraft;
- b) A list of the general arrangement drawings, including references to other drawings which, in association, completely define the design of the aircraft;
- c) A summary of the basic aerodynamic and other data used in the aircraft design;
- d) A summary of the design assumptions and calculations;
- e) A summary of the aircraft weight and centre-of-gravity details (see Chapter A5-4);
- f) A list of reserve factors for ultimate load conditions at all critical parts of the aircraft structure;
- g) Copies of reports giving the particulars and results of airworthiness acceptance tests;
- h) Particulars of any variations from the CAA requirements as have been authorised with respect to the aircraft design, giving the reference number of the CAA written authority for the deviations;
- i) Copies of subsidiary Type Records and Declarations of Design and Performance relating to the aircraft components and equipment (see Chapter A4-8).

4 Manufacture

- 4.1 The aircraft shall be manufactured under the supervision of an Organisation approved by the CAA for the purpose (see Sub-Section A8 or JAR-21). Before any part of the aircraft is finally certified, the Approved Organisation shall be satisfied that the work has been carried out, inspected, and tested where necessary, for conformity with the specifications, drawings, and instructions relating to the Approved design.
- 4.2 During the course of manufacture and of airworthiness acceptance testing, including flight testing (see Chapter A3-3), the aircraft shall be made available to enable the CAA to inspect it as necessary.
- 4.3 All relevant inspection records shall be made available to the CAA for examination, and these shall not be destroyed without authorisation from the CAA.

5 Maintenance Review Board

To determine the initial maintenance and inspection requirements, a Maintenance Review Board (see Chapter A5-2) will normally be established for all prototype aircraft the Maximum Total Weight Authorised (MTWA) of which exceeds 5700 kg, prior to UK Transport Category certification.

6 Maintenance, Overhaul and Repair Manuals

Manuals containing information and recommendations necessary for the maintenance, overhaul and repair of the aircraft, including its engines and auxiliary power units, propellers, components, accessories, instruments, electrical and radio apparatus and their associated systems, and radio station fixed fittings, shall be provided by the Manufacturer/Type Design Organisation to comply with Chapter A5-3.

7 Flight and Crew Manuals

- 7.1 Copies of the Flight Manual shall be provided (see Chapter A7-2).

7.2 Copies of the Crew Manual shall be provided (see A7-3).

8 For Used Aircraft

8.1 Reports

8.1.1 For aircraft with a maximum take-off weight above 15,000 kg, the Applicant, through the medium of the Type Certificate Holder (if appropriate) or an organisation approved in accordance with BCAR A8-8 Group E3, must provide reports (see Appendix 1 to A8-8) confirming that the airworthiness and design standard of the aircraft, including its Flight Manual and instructions for continued airworthiness, conforms to a standard approved by the CAA for the aircraft type or differs in a defined manner from the approved standard.

NOTE: In the case where the issue of a Certificate of Airworthiness is to be completed outside the United Kingdom at a place where an organisation is not specifically approved to provide reports for the purpose, the overseas organisation shall be one that is acceptable to the CAA.

8.1.2 For aircraft with a maximum take off weight of 15,000 kg or less, the Applicant shall, through the medium of an E3 Design Organisation or the Type Certificate Holder (if appropriate) or a suitably approved Maintenance Organisation, provide reports and data (see Appendix to A8-8) confirming that the airworthiness and design standard of the aircraft, including its Flight Manual and instructions for continued airworthiness, conforms to a standard approved by the CAA for the aircraft type, or differs in a defined manner from the approved standard. Subject to CAA agreement, appropriately licensed aircraft maintenance engineers for aircraft types not listed in paragraph 14 of Airworthiness Notice No. 10 may provide such reports. The use of the services of an E3 approved organisation is recommended, particularly where the work to establish compliance is significant.

8.2 The aircraft and the relevant records shall be reviewed to determine the work to be undertaken to maintain the airworthiness of the aircraft. The aircraft and associated records must be made available at facilities suitable for the purpose.

8.2.1 In determining the work to be undertaken on the aircraft, the following should be taken into consideration:

- a) The age, areas and types of operation, and conditions of storage of the aircraft;
- b) Compliance with the Type Certificate Holder's Instructions for Continued Airworthiness and Airworthiness Limitations;
- c) Work already certified in the relevant records;
- d) All repairs embodied have records adequate to establish compliance with an Approved scheme or manual acceptable to the CAA;
- e) All modifications embodied have records adequate to indicate either, the source of approval or the Organisation responsible for embodiment;
- f) Compliance with Airworthiness Directives, CAA Additional Directives, Mandatory Modifications/Inspections and Airworthiness Notices.

8.2.2 The Applicant shall carry out any work on the aircraft which the CAA may decide is necessary.

8.3 All relevant inspection records shall be made available to the CAA for examination, and shall not be destroyed without authorisation from the CAA.

9 General

- 9.1 The aircraft shall be weighed, and copies of the Weight and Centre of Gravity Schedule and, where appropriate the Weight and Balance Report shall be provided (see Chapter A5-4).
- 9.2 For Prototype and Variant aircraft a Certificate of Clearance (see Appendix to Chapter A8-9) shall be issued, and the aircraft shall be tested in flight to schedules approved by the CAA in accordance with Chapter A3-3.
- 9.3 For Series aircraft, a Certificate of Fitness for flight (see Chapter A3-8) shall be issued, and the aircraft shall be tested in flight to schedules approved by the CAA in accordance with Chapter A3-3.
- 9.4 If there is a requirement for a Private Category Certificate of Airworthiness for Ferry purposes to be issued in order to return a used aircraft from overseas, this will normally only be issued following a survey by a United Kingdom CAA Surveyor.

10 Records and Log Books

In accordance with the Air Navigation Order a Certificate of Release to Service shall be entered in or attached to the appropriate log books or other maintenance records (see Chapter A6-7).

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Chapter A3-3 Flight Testing for Issue of Certificate of Airworthiness or a Permit to Fly

1 General

1.1 The flight testing of series aircraft under investigation for the issue of a Certificate of Airworthiness or a Permit to Fly shall comply with the procedures set out in this Chapter A3-3.

1.2 All owners of aircraft to be flown by a CAA Safety Regulation Group Test Pilot for any test purposes, are required to ensure that insurance policies covering damage to the aircraft and third parties are suitably endorsed to provide appropriate cover against any claims which may be made against the CAA or the Test Pilot, arising out of the test flight.

NOTE: It is understood that in general, insurers and underwriters are willing to extend the cover of their aircraft policies for this purpose, on request and without further charge.

1.3 In order that the CAA may accept reports on flight test matters, the qualifications and experience of personnel involved in flight testing under the provisions of this Chapter shall be acceptable to the CAA. Flight test personnel shall be provided with adequate facilities and equipment for the effective performance of their duties

NOTE: Organisations approved in accordance with A8-9 to fly aircraft under 'B' Conditions of the Air Navigation Order comply with this requirement.

2 Applications

2.1 The following requirements and procedures are applicable where first application is made for the issue of a United Kingdom Certificate of Airworthiness or a Permit to Fly in respect of a Series aircraft.

2.2 The CAA may decide that the requirements of this paragraph 2 be applied to imported aircraft of United Kingdom manufacture which have previously been registered in the United Kingdom.

NOTE: In making a decision the CAA will take account of the maintenance history and modification standard of the aircraft.

2.3 General

2.3.1 Flight tests shall be completed to establish that:

- a) handling characteristics are satisfactory and typical of the type;
- b) climb performance equals or exceeds the scheduled data;

NOTE: Data is necessary in order to assess any future deterioration of performance in service.

- c) the aircraft and its equipment function satisfactorily;
- d) additional Requirements and Special Conditions, where applicable, have been complied with.

2.3.2 Series aircraft shall be tested in accordance with a) or b), as appropriate.

- a) **New Aircraft Constructed in the United Kingdom.** The flight tests shall be conducted under the supervision of the aircraft Type Design Organisation. The CAA will carry out a Series flight test on a sample of the aircraft in order to monitor the standard.
- b) **Re-imported Aircraft.** Where the aircraft type and origin are well known to the CAA, the flight testing may be delegated to the Applicant, importing agents or operators, provided that the pilot and flight crew engaged in the testing have been associated previously with CAA airworthiness flight testing of aircraft of the same, or closely similar, type. However, the CAA may notify the Applicant of its intention to carry out, or participate in, flight tests.

Where the CAA has notified the Applicant of its intention to carry out, or participate in, flight tests, the Applicant shall, when requested, provide adequate opportunities for the CAA to become re-familiar with the aircraft type.

- 2.3.3 Where the tests are carried out other than by the CAA, a flight test report, in a form acceptable to the CAA, shall be provided. The CAA may require any of the tests to be repeated, either by the Applicant or by the CAA.

3 Flight Test Schedules

- 3.1 **New Aircraft.** The manufacturer's flight tests (see sub-paragraph 2.3.2 a)) shall be made to a Production Flight Test Schedule agreed by the CAA. Where the CAA carries out a sample Series flight test, the Flight Test Schedule will be prepared in accordance with paragraph 3.2.

- 3.2 **All Other Aircraft.** The flight tests shall be made to the CAA Airworthiness Flight Test Schedule for the type (see paragraph 3.3), or to such other schedule as may be agreed. Such a schedule shall contain details of the aircraft type to which it refers, shall be marked with a reference number, issue number, and date, and shall include the following:

- a) Tests to check the aircraft performance;
- b) Tests to check such handling qualities of the aircraft as have been agreed in consultation with the CAA;

NOTE: It is convenient for the flight test schedule to contain the following handling tests, as these combine, in a brief form, checks on various flight characteristics.

- i) A qualitative assessment of the take-off;
 - ii) An assessment of the trim of the aircraft and the effectiveness of primary flight controls and trimmers in steady flight;
 - iii) Hover manoeuvres for helicopters;
 - iv) Flight at maximum speed;
 - v) Stalls in the take-off and landing configurations;
 - vi) A qualitative assessment of the landing.
- c) Tests to check functioning of the aircraft equipment in flight;
 - d) Such other tests as are requested by the CAA.

NOTE: Controls, systems and equipment which are used regularly may be considered, for the purpose of this schedule, to have been checked on the basis of normal usage.

3.3 **Flight Test Results**

3.3.1 The flight test results, in a form acceptable to the CAA, shall be submitted for acceptance as follows:

- a) In respect of aircraft classified in Group I in accordance with Chapter A3-4: to the CAA;
- b) In respect of an aircraft classified in Group II in accordance with Chapter A3-4: to the organisation approved in accordance with Chapter A8-15 which is supervising the Certificate of Airworthiness renewal procedure. Once accepted by that organisation, the results shall be forwarded to the CAA for record purposes;
- c) In respect of an aircraft to which Chapter A3-7 is applicable: to the organisation approved in accordance with Chapter A8-15 which is supervising the Permit to Fly renewal procedure. Once accepted by that organisation, the results shall be forwarded to the CAA for record purposes.

3.3.2 The flight test result shall include a certificate, in the following form, which shall be signed by the pilot who conducted the test.

FLIGHT TEST CERTIFICATE	
Aircraft Type:	
Registration:	
Manufacturer's No.:	
I CERTIFY that I have tested the above aircraft to Airworthiness Flight Test Schedule reference	
The following deficiencies and unsatisfactory features were revealed by the flight tests or noted at other times during the flight(s) and I CONSIDER that those annotated 'R' and/or 'FT' should be dealt with as follows:	
(a) Those annotated 'R' should be rectified prior to the issue of the Certificate of Airworthiness or flight for hire or reward, whichever occurs first.	
(b) Those annotated 'FT' re-assessed in flight, following remedial action, before the defect can be considered to be rectified.	
1	
2	
3	
4 (etc)	
The above have been transcribed to for rectification and clearance.	
Pilot	Signed
Date	Licence No

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Chapter A3-4 Renewal of Certificate of Airworthiness

1 Introduction

1.1 General

1.1.1 The renewal of a Certificate of Airworthiness shall be subject to compliance with the procedures set out in this Chapter.

1.1.2 For the purpose of this Chapter, aircraft are grouped in accordance with the Maximum Total Weight Authorised (MTWA), type of design and Certificate of Airworthiness Category, as follows:

Group I. All aircraft not included in Group II;

Group II. Piston engined aeroplanes and rotorcraft the MTWA of which does not exceed 2730 kg, certificated in the Transport Category (Passenger), Transport Category (Cargo), Aerial Work Category and Private Category.

1.2 **Applicability.** For each Group, compliance shall be shown with the requirements as follows:

Group I. The requirements of paragraphs 2, 3, 5, 6 and 7;

Group II. The requirements of paragraphs 2, 4, 5, 6 and 7.

2 Application

Form AD200, copies of which may be obtained from the CAA Safety Regulation Group, shall be completed and returned. The application shall be accompanied by the appropriate fee, which is prescribed in the CAA Scheme of Charges.

2.1 If, for the CAA investigation, travel outside the United Kingdom is necessitated, the applicant will be required to meet the additional costs.

3 Procedure No. 1 for Group I aircraft.

3.1 The aircraft and its records shall be in a condition acceptable to the CAA, for such inspections that are considered necessary.

3.2 The aircraft inspection and the review of the records shall be by an appropriately Approved Organisation (see paragraph 3.2.2 Note) to determine the work to be undertaken to maintain the airworthiness of the aircraft.

3.2.1 The physical inspection of the aircraft for the purpose of making a recommendation for the renewal of the Certificate of Airworthiness shall be completed within 30 days prior to making the renewal recommendation.

3.2.2 Where an inspection is carried out on an aircraft, specifically for the purpose of the renewal recommendation of the Certificate of Airworthiness, the inspection shall be carried out at the premises approved for the purpose and a report and renewal recommendation shall be prepared by an appropriately Approved Organisation (see Chapter A8-3 Supplement 2 and Chapter A8-15 paragraph 3.1.1). A copy of the report

detailing the work required shall be retained by the Organisation and made available to the CAA upon request.

NOTES: 1 It shall be the responsibility of the Approved Organisation making the renewal recommendation to determine the extent of any inspection required in order to be satisfied the aircraft remains in compliance with applicable certification and airworthiness requirements.

2 In the case of the renewal being completed abroad at a place where an Organisation is not specifically approved for the purpose, the overseas Organisation shall be one that is acceptable to the CAA. The renewal process is to be predicated upon an inspection report prepared by an authorised person or an appropriately licensed aircraft maintenance engineer. A copy of the report detailing the work required shall be sent to the CAA. In such cases, the CAA may decide that surveyor involvement is necessary (see paragraph 2.1).

3.2.3 In determining the work to be undertaken on the aircraft, due account shall be taken of the following:

- a) The age, storage conditions, total hours/cycles, areas and type of operation of the aircraft.
- b) Compliance with the requirements of the Approved Maintenance Schedule (see Chapter A7-5);
- c) Work certified in the relevant records;
- d) The periods between overhauls and any finite or service life limits, prescribed or approved by the CAA, in respect of the aircraft and its parts;
- e) Such other requirements or instructions approved by the CAA (e.g. mandatory modifications and inspections) relating to the maintenance of airworthiness;
- f) Foreign airworthiness directives adopted by the CAA, and CAA Additional Directives, where appropriate, in respect of the aircraft and its parts;
- g) The manufacturer's recommendations in Service Bulletins, Maintenance Manuals, Maintenance Planning Documents (MPD) or equivalent documents;

NOTE: Items b) to g) may be covered by a Condition Monitored Maintenance Programme approved by the CAA (see Chapter A6-2 Appendix 1).

h) Ensure compliance with the Type Certificate Data Sheet (TCDS).

3.2.4 The CAA may determine the work required to be carried out on the aircraft.

3.3 All work undertaken in connection with the renewal of the Certificate of Airworthiness of the aircraft shall be supervised by an organisation approved by the CAA (see Chapters A8-3 Supplement 2 and A8-15), at a place where the equipment, the general conditions and the necessary supervisory procedures are to a standard approved by the CAA. Before the work is finally certified, the Approved Organisation shall be satisfied that the work has been carried out, inspected and tested where necessary, for conformity with the specifications, drawings and instructions relating to the approved design and with the requirements for the continuing airworthiness of the aircraft and its equipment.

3.4 The recommendation for the renewal of the Certificate of Airworthiness, shall be made on form AD 202NR by the Approved Organisation. When completed two copies shall be forwarded to the appropriate CAA Office, the original Certificate of Airworthiness should be returned to the CAA on expiry. A copy of Form AD 202NR

shall be included in the aircraft records and an additional copy retained by the Approved Organisation.

- 3.5 For Certificates of Airworthiness with a validity of 12 months, the renewal recommendation may be anticipated by a maximum of 30 days before the date of expiry without loss of validity. For Certificates of Airworthiness with a validity of 36 months, the renewal recommendation may be anticipated by a maximum of 62 days before the date of expiry without loss of validity. If the Certificate of Airworthiness has expired the validity will take effect from the date the submission is received and accepted by the CAA.
- 3.6 The aircraft shall have been tested in flight in accordance with Chapter A3–5. Where a flight test is necessary and the Certificate of Airworthiness has expired, a Certificate of Fitness for Flight (see Chapter A3–8) shall have been issued to allow the aircraft to be flown under 'A' conditions.

4 Procedure No. 2 for Group II aircraft

- 4.1 The aircraft and its records shall be in a condition acceptable to the CAA for such inspections as are considered necessary.
- 4.2 A Star Inspection and the coincident annual inspection shall be carried out, at the premises of an organisation approved in accordance with BCAR Chapter A8–15 and certified by holders of UK-Aircraft Maintenance Engineers' Licences with Type Ratings valid for the particular aircraft type.
- 4.3 For aircraft operated for commercial air transport, the Star Inspection and the coincident annual inspection shall be carried out, at the premises of a suitably approved Part 145 Organisation which is also approved in accordance with BCAR Chapter A8–15 and certified by persons holding appropriate company authorisations valid for the particular aircraft type.

NOTE: In the case of the renewal being completed abroad at a place where an Organisation is not specifically approved for the purpose, the overseas Organisation shall be one that is acceptable to the CAA. The renewal process is to be predicated upon an inspection report prepared at the agreed site by the Approved A8–15 Organisation's nominated person. A copy of the report detailing the work required shall be sent to the CAA. In such cases, it may be decided that surveyor involvement is necessary (see paragraph 2.1).

- 4.4 In deciding the depth of the Star Inspection and the extent of the work to be undertaken to maintain the airworthiness of the aircraft and to enable the recommendation for the renewal of the Certificate of Airworthiness to be made, the Approved Organisation shall take account of the following:
- a) the age, storage conditions, total hours/cycles, areas and type of operation of the aircraft;
 - b) compliance with the requirements of the Approved Maintenance Schedule;
 - c) work certified in the relevant records;
 - d) the periods between overhauls and any finite or service life limits, prescribed or approved by the CAA, in respect of the aircraft and its parts;
 - e) such other requirements or instructions approved by the CAA (e.g. mandatory modifications and inspections) relating to the maintenance of airworthiness;
 - f) foreign airworthiness directives adopted by the CAA, and CAA Additional Directives, where appropriate, in respect of aircraft parts;

- g) the manufacturer's recommendations in Service Bulletins, Maintenance Manuals or equivalent documents;
 - h) ensure compliance with the TCDS.
- 4.5 Following the Star Inspection an Inspection Report, in which any work which has been undertaken is detailed, shall be prepared, certified and included in the aircraft records.
- 4.6 All work undertaken in connection with the renewal of the Certificate of Airworthiness of the aircraft shall be supervised by an Organisation approved in accordance with Chapter A8-15. Before the work is finally certified, the Approved Organisation shall be satisfied that the work has been carried out, inspected, and tested where necessary, for conformity with the specifications, drawings and instructions relating to the approved design, and with the requirements for the continuing airworthiness of the aircraft and its equipment.
- 4.7 The recommendation for the renewal of the Certificate of Airworthiness, shall be made on Form AD 202NR by the Approved Organisation. When completed, two copies shall be forwarded to the appropriate CAA office. The original Certificate of Airworthiness should be returned to the CAA on expiry. A copy of Form AD 202NR shall be included in the aircraft records and an additional copy retained by the Approved Organisation.
- 4.8 The CAA may agree, at the request of the Applicant, to survey an aircraft during the Star Inspection. The CAA may then decide on the extent of the investigation and on any additional work required to permit renewal of the Certificate of Airworthiness. The cost of any such additional survey shall be met by the Applicant.
- 4.9 The Certificate of Airworthiness renewal recommendation may be anticipated by a maximum of 62 days before the date of expiry without loss of validity. If the Certificate of Airworthiness has expired the validity shall take effect from the date the submission is received and accepted by the CAA.
- 4.10 The aircraft shall have been tested in flight, in accordance with Chapter A3-5. Where a flight test is necessary and the Certificate of Airworthiness has expired, a Certificate of Fitness for Flight (see Chapter A3-8) shall have been issued to allow the aircraft to fly under 'A' conditions.

5 Re-Weighing of Aircraft (see Chapter A5-4)

- 5.1 Re-weighing of aircraft at the time of renewal of the Certificate of Airworthiness will be dependent on the date of the last weighing, and on the history of the aircraft.
- NOTE:** Aircraft are normally weighed when all manufacturing processes are completed.
- 5.1.1 Aircraft of more than 5700 kg MTWA shall be re-weighed within two years after the date of manufacture. Subsequent check weighing shall be carried out at intervals not exceeding five years and at such other times as the CAA may require.
- 5.1.2 Aircraft of 5700 kg MTWA or less shall be re-weighed at such times as the CAA may require.
- 5.1.3 The CAA shall be consulted if there is any doubt as to whether the aircraft ought to be re-weighed.
- 5.1.4 When re-weighing is necessary, an amended Weight and Centre-of-Gravity Schedule, or its equivalent as prescribed in Chapter A5-4, shall be prepared. During the course of any re-weighing procedures the accuracy of all data previously recorded, for

example lever arms, shall be checked e.g. against the appropriate manufacturer's current data.

- 5.1.5 At the time of a re-weighing or when a revised Weight and Centre-of-Gravity Schedule is raised following the addition, removal or relocation of equipment, a copy of the Weight and Centre-of-Gravity Schedule shall be retained by the Approved Organisation and made available to the CAA upon request.

NOTE: For an aircraft operated by an EU-OPS or JAR-OPS Operator, weighing requirements shall be determined in accordance with Subpart J of EU-OPS or JAR-OPS 3 as appropriate.

6 Records and Log Books

- 6.1 Aircraft records in the form of log books, separate maintenance records forming part of log books, or maintenance records kept by any other method approved by the CAA, shall be made available if specifically requested by the CAA.

NOTE: The Air Navigation Order requires that log books, and other documents which are identified and referred to in the log books (therefore, forming part of the log books), shall be preserved for two years after the aircraft, engine or variable pitch propeller has been destroyed or permanently withdrawn from use.

- 6.2 All relevant inspection records shall be made available to the CAA, if specifically requested by the CAA.

- 6.2.1 Inspection records shall not be destroyed without authorisation from the CAA.

- 6.3 Full particulars of the work carried out relating to the renewal of the Certificate of Airworthiness shall be entered in the appropriate log book(s) or other Approved maintenance records, and a Certificate of Release to Service shall be completed and attached or included, as appropriate (see Chapter A6–7).

- 6.3.1 When it is more convenient, particulars of the work done may be entered in a separate maintenance record which shall be certified in the same manner as that required for entries in the log books. The reference number of this record, and the place where it may be examined, shall be entered in the log books under a brief description of the particular work. The record thereafter forms part of the log book and a copy should be supplied to the owner.

NOTE: Compliance with Airworthiness Directives, Service Bulletins, Modifications, Component Replacements and Scheduled Checks carried out at the time must be individually referenced in the aircraft, engine or propeller log book as appropriate.

7 Manuals

- 7.1 A check shall be made by the Approved Organisation to ensure that the Flight Manual is up to date, and any necessary action to bring it up to date shall be taken. Confirmation of the correct Flight Manual Amendment status shall be provided to the CAA. The Flight Manual shall be made available to the CAA, if specifically requested.

NOTE: The term 'Flight Manual' includes any document accepted in place of a Flight Manual.

- 7.2 Maintenance, Overhaul and Repair Manuals used shall be up to date and they shall be amended in accordance with the procedures set out in Chapter A7–4 to incorporate amendments necessary to cover the physical state of the aircraft.

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Chapter A3-5 Flight Testing for Renewal of Certificates of Airworthiness or a Permit to Fly

1 General

1.1 Flight tests shall be completed periodically to ensure that the aircraft flight characteristics and the functioning in flight of the aircraft do not differ significantly from those acceptable to the CAA for the aircraft type. See Chapter A3-3, paragraph 1.2.

1.2 In order that the CAA may accept reports on flight test matters, the qualifications and experience of personnel involved in flight testing under the provisions of this Chapter shall be acceptable to the CAA. Flight test personnel shall be provided with adequate facilities and equipment for the effective performance of their duties.

NOTE: Organisations approved in accordance with Chapter A8-9 to fly aircraft under 'B' Conditions of the Air Navigation Order comply with this requirement.

1.3 Airworthiness Flight Tests shall be completed in accordance with a), b) or c) as appropriate:

- a) In respect of aircraft classified in Group I in accordance with Chapter A3-4, either:
 - i) annually; or
 - ii) as defined by a fleet test programme agreed between the CAA and the Operator, Maintenance Organisation or other organisation acceptable to the CAA.

For some types of aircraft the individual examples of which are not included in fleet programmes, the CAA is prepared to extend the period between airworthiness flight tests from one to three years

An aeroplane classified in Group I and with a Maximum Total Weight Authorised (MTWA) exceeding 5700kg and of a type that has been found by CAA to have an acceptable and stable airworthiness standard (the list of such types will be made available through the CAA website) will be exempted from the requirements of BCAR Chapter A/B 3-5, paragraph 1.3 a) for a period of 10 years from the year of manufacture for turbojets and 5 years from the year of manufacture for propeller-driven aircraft. At the end of the exemption period an aircraft will rejoin the fleet programme in accordance with BCAR Chapter A/B 3-5, sub-paragraph 1.3 a). CAA reserves the right to conduct any flight test during the exempted period irrespective of process variations or easements previously granted or promised.

- b) In respect of aircraft classified in Group II in accordance with Chapter A3-4, within the period of 62 days immediately preceding the date of renewal of the Certificate of Airworthiness.
- c) In respect of aircraft to which Chapter A3-7 is applicable, within the period of 62 days immediately preceding the date of renewal of the Permit to Fly.

1.4 Airworthiness Flight Tests may normally be conducted under the supervision of the Operator or Maintenance Organisation or other organisation acceptable to the CAA, provided that the pilot/flight crew are acceptable to the CAA for that purpose. In the

case of turbo-jet aircraft with a MTWA exceeding 15 000 kg, the pilot shall have been specifically briefed and accepted for the task by the CAA.

- NOTES:**
- 1 The CAA may require to carry out a proportion of these flight tests, and will notify the Operator or Maintenance Organisation accordingly.
 - 2 The acceptability of a pilot will be evaluated against his competence, having regard to his previous conduct and experience and his familiarity with the appropriate test schedule, flight test techniques and safety precautions.

2 Flight Test Schedules

2.1 **Airworthiness Flight Test Schedules.** The flight tests shall be made in accordance with a) or b):

- a) To the appropriate Airworthiness Flight Test Schedule published by the CAA; or
- b) To a schedule, approved by the CAA, containing, as a minimum, the tests laid down in the Airworthiness Flight Test Schedule. Such a schedule shall contain details of the aircraft type to which it refers, shall be marked with a reference number, issue number, and date, and shall include the following:
 - i) Tests to check the aircraft performance;
 - ii) Tests to check that the handling characteristics are satisfactory and have not deteriorated with time;

- NOTES:**
- 1 The tests will take account of the flying characteristics of the aircraft revealed during flight tests on the Prototype, the results of tests on Series aircraft and the history of the aircraft.
 - 2 It is convenient for the flight test schedule to contain the following handling tests, as these combine, in a brief form, checks on various flight characteristics:
 - i) A qualitative assessment of the take-off;
 - ii) An assessment of the trim of the aircraft and the effectiveness of primary flight controls and trimmers, in steady flight;
 - iii) Hover manoeuvres for helicopters;
 - iv) Flight at maximum speed;
 - v) Stalls in the take-off and landing configurations;
 - vi) A qualitative assessment of the landing.

iii) Tests to check functioning of the aircraft equipment in flight.

NOTE: Controls, systems and equipment which are used regularly may be considered, for the purpose of this schedule, to have been checked on the basis of normal usage.

3 Flight Test Results

3.1 The flight test results, in a form acceptable to the CAA, shall be submitted for acceptance, as follows:

- a) In respect of aircraft classified in Group I in accordance with Chapter A3-4, to the CAA;
- b) In respect of an aircraft classified in Group II in accordance with Chapter A3-4, to the organisation approved in accordance with Chapter A8-15 which is supervising

the Certificate of Airworthiness renewal procedure. Once accepted by that organisation, the results shall be forwarded to the CAA for record purposes;

- c) In respect of an aircraft to which Chapter A3–7 is applicable: to the organisation approved in accordance with Chapter A8–15 which is supervising the Permit to Fly renewal procedure. Once accepted by that organisation, the results shall be forwarded to the CAA for record purposes.

- 3.2 The flight test results shall include a certificate, in the following form, which shall be signed by the pilot who conducted the test.

FLIGHT TEST CERTIFICATE	
Aircraft Type:	
Registration:	
Manufacturer's No.:	
I CERTIFY that I have tested the above aircraft to Airworthiness Flight Test Schedule reference	
The following deficiencies and unsatisfactory features were revealed by the flight tests or noted at other times during the flight(s) and I CONSIDER that those annotated 'R' and/or 'FT' should be dealt with as follows:	
(a) Those annotated 'R' should be rectified prior to the renewal of the Certificate of Airworthiness or flight for hire or reward, whichever occurs first.	
(b) Those annotated 'FT' re-assessed in flight, following remedial action, before the defect can be considered to be rectified.	
1	
2	
3.....	
4 (etc)	
The above have been transcribed tofor rectification and clearance.	
Pilot	Signed
Date	Licence No

4 Fleet Testing Programmes

- 4.1 As an alternative to periodic airworthiness flight testing of individual aircraft, a programme of flight testing of sample aircraft from a fleet may be agreed with the CAA, and such sampling will be accepted by the CAA as being representative of fleet characteristics.

- 4.2 **Basic Requirements.** To be acceptable as a fleet and eligible for a fleet testing programme, the aircraft shall:

- a) be of an acceptably similar type;
- b) be certificated in the Transport Category and have a MTWA exceeding 2730 kg;
- c) be controlled by an organisation, or organisations acceptable to the CAA;

d) have produced consistently satisfactory results in previous Airworthiness Flight Tests for an acceptable period of time.

NOTE: Each aircraft of the type will be subjected to an Airworthiness Flight Test at the end of its first year of operation and if data from such tests is sufficient to confirm compliance with d), those aircraft which have proved to be satisfactory may be considered as eligible for setting up a fleet test programme in accordance with 4.3. If the data in respect of a particular aircraft is insufficient to confirm compliance with d) then that aircraft will be subjected to further Airworthiness Flight Tests at the end of subsequent year(s). An aircraft may be added to an established fleet after one annual test, provided that the results of that test are satisfactory.

4.3 **General**

4.3.1 The size and make-up of each fleet shall be agreed with the CAA.

4.3.2 For each agreed fleet, a flight testing programme shall be agreed with the CAA.

4.3.3 The minimum annual sample required for each fleet shall be 20% of the fleet, or three aircraft, whichever is the lesser, but not less than one aircraft. The frequency and the maximum time period between consecutive tests on individual aircraft shall normally be as in Table 1, but the time period shall not exceed 10 years.

NOTE: Frequencies for some fleets of fixed-wing aircraft and for helicopter fleets may be set differently where the circumstances warrant testing at a higher frequency.

4.3.4 In addition to the reductions in test frequency resulting from fleet testing, the CAA may agree to reductions in the content of the Airworthiness Flight Test Schedules against which the sample aircraft are tested.

NOTE: The intent of the reductions is to eliminate any tests which have produced consistently satisfactory results over several years and to avoid duplication of tests between the Airworthiness Flight Test Schedule and the ground maintenance schedule, where such duplication cannot be justified. Continued duplication could be justified on grounds of unsatisfactory results from previous tests or limited validity of the ground check involved.

Please see following Table 1.

Table 1

NUMBER OF AIRCRAFT IN FLEET	YEAR						
	1	2	3	4	5	6	7
1(A)	A	A	A	A	A	A	A
2(AB)	A	B	A	B	A	B	A
3(A-C)	A	B	C	A	B	C	A
4(A-D)	A	B	C	D	A	B	C
5(A-E)	A	B	C	D	E	A	B
6(A-F)	AB	C	D	E	F	AB	C
7(A-G)	AB	C	DE	F	G	AB	C
8(A-H)	AB	C	DE	F	GH	AB	C
9(A-I)	AB	CD	EF	G	HI	AB	CD
10(A-J)	AB	CD	EF	GH	IJ	AB	CD
11(A-K)	ABC	DE	FG	HI	JK	ABC	DE
12(A-L)	ABC	DE	FGH	IJ	KL	ABC	DE
13(A-M)	ABC	DE	FGH	IJ	KLM	ABC	DE
14(A-N)	ABC	DEF	GHI	JK	LMN	ABC	DEF
15(A-O)	ABC	DEF	GHI	JKL	MNO	ABC	DEF
16(A-P)	ABC	DEF	GHI	JKL	MNO	PAB	CDE
17(A-Q)	ABC	DEF	GHI	JKL	MNO	PQA	BCD
18(A-R)	ABC	DEF	GHI	JKL	MNO	PQR	ABC
19(A-S)	ABC	DEF	GHI	JKL	MNO	PQR	SAB
20(A-T)	ABC	DEF	GHI	JKL	MNO	PQR	STA
21(A-U)	ABC	DEF	GHI	JKL	MNO	PQR	STU

NOTE: For fleets of more than 21 aircraft, the fleet annual sample size should remain at 3 aircraft and the time between consecutive tests on individual aircraft should increase accordingly, subject to the maximum interval laid down in paragraph 4.3.3.

4.3.5 The fleet testing programme shall be reviewed in the event of:

- a) any significant change to the aircraft in the fleet (e.g. a change of engine rating or type);
- b) any failure to maintain the standards on which the programme was based;
- c) any failure to carry out the programme.

5 Operating the Programme

- 5.1 The CAA shall be given the opportunity to participate in any flight test associated with the programme.
- 5.2 The programme shall be controlled under arrangements acceptable to the CAA.
The programme may be controlled by:
- a) the Operator of the aircraft in the fleet; or
 - b) the organisation responsible for the maintenance of the aircraft in the fleet; or
 - c) in the case of an agreement between Operators to pool their fleets, a fleet co-ordinator nominated by the Operators.
- 5.3 The CAA shall be kept informed of any changes to the size or make-up of the fleet, so that the programme may be amended as necessary.
- 5.4 The CAA shall be kept informed of any failure to comply with the programme, so that the programme can be amended as necessary by the CAA.
- 5.5 The CAA may, where it is considered to be necessary, require an Airworthiness Flight Test to be carried out on any aircraft covered by the programme in any year (e.g. in order to correct for slippage, or to clarify any doubts about the flying qualities of individual aircraft or of the fleet).
- 5.6 Airworthiness Flight Tests shall be completed within the time period three months either side of the nominal date for the aircraft concerned.

Chapter A3-6 Certificates of Airworthiness for Export

1 Introduction

- 1.1 The issue of a Certificate of Airworthiness for Export (hereinafter referred to as the 'C of A for Export') shall be subject to compliance with the procedure set out in this Chapter A3-6.
- 1.2 The C of A for Export is not a statutory document, either internationally under ICAO or nationally under the Air Navigation Order. When issued in the United Kingdom it signifies, as at the date of issue, that, except for those significant derogations from the requirements listed on the front (see 4);
- a) in respect of a new aircraft, the aircraft is such that a United Kingdom Certificate of Airworthiness could be issued in accordance with the Requirements;
 - b) in respect of a used aircraft, the aircraft is such that a United Kingdom Certificate of Airworthiness could be issued or renewed, as appropriate, in accordance with the Requirements.
- 1.3 The C of A for Export does not, by itself, give authority for the aircraft to be flown; such authority may, normally, be obtained in accordance with a) or b).
- a) The Authority responsible for airworthiness in the country in which the aircraft is to be registered (hereinafter referred to as the Responsible Authority) may issue a Certificate of Airworthiness;
 - b) The CAA may (in conjunction with the C of A for Export) issue a Certificate of Airworthiness such as would cover the delivery of the aircraft to its destination.

2 Application

- 2.1 Form CA 1241, copies of which may be obtained from the CAA Safety Regulation Group; shall be completed and returned to the same address. The application shall be accompanied by the appropriate charge which is prescribed in the CAA Scheme of Charges.
- 2.2 During the investigation, if it is necessary for a CAA Surveyor to travel outside the United Kingdom, or away from the residential area of an overseas office of the CAA Safety Regulation Group, the CAA will require the Applicant to meet the additional costs involved.

3 Compliance with Requirements

- 3.1 When the CAA is satisfied that compliance has been shown with this paragraph 3, the C of A for Export will be issued.
- 3.2 **Additional Requirements and Special Conditions.** Compliance shall be shown with any Additional Requirements or Special Conditions prescribed by the Responsible Authority and notified to the CAA in writing.
- 3.3 **CAA Requirements.** In addition to compliance with 3.2, compliance shall be shown with 3.3.1 or 3.3.2 or 3.3.3 as appropriate.
- 3.3.1 **New Aircraft.** Compliance shall be shown with A2-2, A2-4 and A3-2 as appropriate.

3.3.2 **Used Aircraft of a Type Previously Certificated in the United Kingdom.**

Compliance shall be shown with the requirements of A3–4 as applicable but with the addition of Surveyor involvement.

- NOTES:**
- (1) To qualify for the renewal of a Certificate of Airworthiness and hence the issue of a Certificate of Airworthiness for Export, aircraft below 2730 kg should have undergone a maintenance check, equivalent to an annual inspection and a Certificate of Release to Service issued in accordance with the Air Navigation Order Article 12. The inspection should have been performed and properly documented within the 30 days immediately prior to the issue of the Certificate of Airworthiness for Export. For aircraft above 2730 kg, consideration may be given to the maintenance check performed on an aircraft maintained in accordance with an Approved maintenance inspection programme i.e. an equalised or progressive inspection programme.
 - (2) In deciding the extent of rectification and overhaul work, account will be taken of maintenance history and the condition of the aircraft.
 - (3) Where the extent of work to be done on the aircraft prior to export is the subject of a contract, the CAA may, where it is apparent that the full certification requirements are not intended to be met, require the Applicant to obtain from the Responsible Authority, a written confirmation that the contractual arrangements are acceptable. The Certificate of Airworthiness for Export will be qualified accordingly.

3.3.3 **Used Aircraft of a Type Not Previously Certificated in the United Kingdom**

The requirements shall be decided in consultation with the CAA.

NOTE: In deciding the requirements to be met, account will be taken, amongst other things, of the needs of the Responsible Authority, the original certification status of the aircraft, its condition and maintenance history and the number of aircraft likely to be involved.

4 Derogations from the Requirements

4.1 The following will be listed on the front of the C of A for Export:

- a) Significant deviations from the Approved build standard;
- b) Derogations from CAA requirements, Additional Requirements, and Special Conditions;
- c) Mandatory modifications and inspections with which compliance has not been shown;
- d) In respect of equipment prescribed in the Air Navigation Order:
 - i) Such equipment which is fitted, but has not been approved by the CAA;
 - ii) Equipment appropriate to the certification Category, where this is not fitted.

4.2 Any item listed in accordance with 4.1 shall be confirmed, in writing, to be acceptable to the Responsible Authority prior to the issue of the C of A for Export.

Chapter A3-7 Issue and Renewal of National Permits to Fly

1 Introduction

1.1 The CAA may, in pursuance of Articles 8(2)(e) and 11(1)(a) of the Air Navigation Order, issue a national Permit to Fly in respect of an aircraft which may then fly in accordance with the conditions of the Permit.

NOTE: For the purpose of this Chapter A3-7, a person approved or authorised by the CAA means an organisation, association, individual or other legal entity approved or authorised by the CAA to submit reports or recommendations for Permit issue, in respect of aircraft eligible for Permits to Fly.

1.2 As provided under Article 11(1)(b) of the Air Navigation Order, the CAA shall refuse to issue a national Permit to Fly to a non-EASA aircraft if the aircraft is eligible for, and ought to fly under and in accordance with, a national certificate of airworthiness.

1.3 The issue of a national Permit to Fly under the provisions of Article 11(1)(a) of the Air Navigation Order will otherwise be subject to procedures appropriate to the case, as set out in this Chapter, i.e.

- a) A Permit to Fly for an aircraft of a design that satisfies a code of airworthiness requirements agreed by the CAA as being suitable for the purpose; or
- b) A Permit to Fly for a Series aircraft (being an aircraft which in the opinion of the CAA, conforms in all matters affecting airworthiness to a design in respect of which Type Approval has been granted under BCAR A, Chapter A2-7) - see sub-paragraph 3.1 b) and paragraph 4.1.
- c) A Permit to Fly for an individual civil aircraft not eligible under a) above - see sub-paragraph 3.1 c) and paragraph 4.2 (e.g. a home-built aircraft).
- d) A Permit to Fly for an individual ex-military aircraft - see sub-paragraph 3.1 d) and paragraph 4.3.
- e) A Permit to Fly for test purposes may be issued to enable flight evaluation of an aircraft or modified aircraft where in the opinion of the CAA, it is not appropriate for the flight evaluation to be conducted under ANO Schedule 3 "B" Conditions. A Permit to Fly for test purposes will not be issued unless the Applicant determines and the CAA agrees that there are no significant flight safety implications. A Permit to Fly for test purposes shall not be valid for flights other than those on which tests under the flight test programme are being carried out.
- f) A Permit to Fly for ferry purposes may be issued to enable an aircraft not holding a valid Permit or Certificate of Airworthiness to be ferried to a place where maintenance is to be carried out. A Permit to Fly for ferry purposes will not be issued unless the Applicant determines and the CAA agrees that there are no significant flight safety implications.

2 Application

2.1 Where application is to be made for a national Permit to Fly, Form SRG 1701 shall be completed at an early stage of the project, and returned with the appropriate deposit. Form SRG 1701 can be obtained from the Civil Aviation Authority, Safety Regulation Group, Applications and Approvals Department, or alternatively can be completed online via the CAA website at www.caa.co.uk/SRG1701

2.2 The charges are prescribed in the CAA Scheme of Charges contained in Official Record Series 5, available via the CAA website at www.caa.co.uk/ORS5. The Applicant shall pay charges equal to the cost of the investigation, but not exceeding the amount prescribed in the CAA Scheme of Charges. During the course of the investigation the CAA will normally render accounts at monthly intervals.

2.3 During the investigation, if it is necessary for a CAA Surveyor to travel outside the United Kingdom, the CAA will require the Applicant to meet the additional costs involved.

3 Design Basis

3.1 The Applicant shall indicate the basis on which they propose the CAA should decide whether the design of the aircraft qualifies for the issue of a national Permit to Fly. Such bases may be that the aircraft:

- a) is of a design that satisfies a code of airworthiness requirements agreed by the CAA as being suitable for the purpose; or
- b) conforms to a design in respect of which a Type Approval has been issued by the CAA (a Series aircraft); or
- c) has satisfied a standard notified for the purpose by the CAA, or by a person suitably approved by the CAA (e.g. this would be the case for a home-built aircraft); or
- d) is of ex-military origin and conforms with a design which has been accepted by the recognised national authorities of the State of Design to fly within defined limitations. It must be demonstrated that the aircraft type has accumulated sufficient experience of safe operation to indicate that such aircraft are safe to fly, subject to whatever conditions may be appropriate. The aircraft shall also have been shown not to possess unacceptably hazardous features.

NOTE: A military authority may be recognised by the CAA for the purpose of this qualification.

4 Design Substantiation

4.1 Where application for an individual national Permit to Fly is on the basis of sub-paragraph 3.1 b) (Series aircraft), the Applicant shall submit the required evidence of conformity. Where the Applicant can show that the aircraft conforms to a design in respect of which a Type Approval has been issued, it shall be eligible as a Series aircraft for a Permit to Fly. In the case of a used aircraft, the CAA may require further acceptable evidence to demonstrate that its individual operational history has not invalidated its Series status.

4.2 Where application is for an individual Permit to Fly for a civil aircraft, (e.g. home-built aircraft), on the basis of sub-paragraph 3.1 c), evidence that the design satisfies the appropriate standard shall be submitted by a person considered suitable for the purpose by the CAA.

4.3 Where the application is in respect of an ex-military aircraft on the basis of sub-paragraph 3.1 d), the Applicant shall supply acceptable evidence of compliance. (See Appendix 1 to this Chapter A3-7 for details of evidence required under this paragraph.)

4.4 Where the Applicant can show that the aircraft conforms to a design, a previous example of which has been issued with a national Permit to Fly, the CAA will grant a national Permit to Fly based on the requirements of paragraph 5 below.

5 Standard of Construction or Assembly

- 5.1 The Applicant shall satisfy the CAA that the construction of the aircraft conforms with the specifications, drawings and instructions (including those for testing and inspection), which comprise the design accepted in accordance with the preceding sections of this Chapter A3-7.
- 5.2 Except in the case of an aircraft constructed outside the UK, for the purposes of paragraph 5.1, the aircraft shall be constructed or assembled either:
- a) by a person approved or accepted by the CAA for the purpose and subject to any independent inspection the CAA may specify; or
 - b) under the supervision of a person approved or accepted by the CAA for the purpose; or
 - c) shall be shown by a person approved or accepted by the CAA for the purpose, to have been previously constructed in accordance with paragraph 5.1 (e.g. factory-built ex-military aircraft).
- 5.3 In the case of an aircraft constructed under sub-paragraph 5.2 a), b) or c), the aircraft shall be made available to enable the CAA to survey it as appropriate during its construction.
- 5.4 For the purposes of sub-paragraph 5.2 a) or b), where construction and assembly are by separate organisations, each shall be approved by the CAA or shall be supervised by persons approved by the CAA for the purpose.
- 5.5 In the case of an aircraft constructed outside the UK, for the purposes of paragraph 5.1, the CAA may accept reports from persons considered suitable for the purpose by the CAA, and would normally require such reports to be approved or endorsed by the appropriate National Authority.

6 Flight Tests and Check Flights

- 6.1 Every aircraft shall be the subject of a satisfactory flight test before the first issue of a national Permit to Fly granted under sub-paragraph 1.3 a), b) or c). The test programme shall be agreed with the CAA prior to flying.
- 6.2 Except in the case of organisations approved to conduct flight tests under ANO Schedule 3 Part A 'B' Conditions, in order to allow test flights to take place the CAA may, as provided under sub-paragraph 1.3 d) when satisfied with the fitness for flight of the aircraft and with the arrangements for conducting the flying, issue a Permit to Fly for test purposes. The Conditions under which the aircraft may be flown, including any limitations, will be specified. The period of validity will be limited to that considered necessary for the tests.
- 6.3 Where application for issue is made directly to the CAA, the flight test must be made and a report submitted by a pilot acceptable to the CAA. Where application is made through an organisation approved to make recommendations to the CAA concerning the issue, renewal or re-validation of a Permit to Fly, the flight test must be conducted in accordance with the procedures of that organisation. See also BCAR Chapter A3-3, Flight Testing.
- 6.4 Unless an alternative check flight programme has been agreed by the CAA, an aircraft that has been issued with a national Permit to Fly will be required to carry out a check flight annually as part of the requirements to re-issue the Certificate of Validity.

7 Permit Flight Release Certificate

- 7.1 When specified on the conditions associated with a Permit to Fly for test or for ferry purposes, prior to conducting flights under that Permit, a Permit Flight Release Certificate (PFRC) shall be issued.
- 7.2 A PFRC shall be issued following evaluation by a person referenced in paragraph 7.4 to certify that the aircraft is fit for flight. This evaluation should include establishing that the aircraft conforms to a design or standard accepted by the CAA or Approved Organisation for the issue of a Permit to Fly and that all applicable continuing airworthiness requirements have been satisfied. The certificate shall be rendered valid for a specific period to cover a defined ferry journey or a series of flights as part of an accepted flight test programme.
- 7.3 The format of the Permit Flight Release Certificate is referenced in Appendix 3 to this Chapter A3-7.
- 7.4 A Permit Flight Release Certificate shall be issued only by the following:
- a) the holder of an appropriate category aircraft maintenance engineer's licence granted or rendered valid in the United Kingdom, who has been specifically authorised by the CAA for the purpose;
 - b) persons specifically authorised by the CAA for the purpose;
 - c) persons specifically approved by the CAA when acting within the appropriate terms of approval.

8 Issue of National Permit to Fly

- 8.1 The CAA may issue a Permit to Fly when it is satisfied, on the basis of its own investigations or upon receiving a recommendation from a person approved or accepted for the purpose, that in respect of its design and construction and all other relevant matters an aircraft meets the foregoing requirements.
- 8.2 The Permit to Fly will include any conditions and limitations under which the aircraft may be flown and in certain cases any relevant maintenance requirements that are to be met. The CAA may restrict the number of occupants that may be carried in aircraft operating in accordance with a Permit to Fly.
- 8.3 A Permit to Fly issued in accordance with this Chapter A3-7, other than for ferry or test purposes, will be rendered valid by the periodic issue of a Certificate of Validity.

9 Issue of Certificate of Validity

- 9.1 A national Permit to Fly will normally be rendered valid for a period of one year by the issue of a Certificate of Validity. The CAA will issue the first Certificate of Validity to an aircraft when the national Permit to Fly is issued.
- 9.2 The re-issue of a Certificate of Validity will be by recommendation from an organisation approved by the CAA, or by recommendation from persons accepted by the CAA for the purpose, or the CAA may undertake a survey of the aircraft and associated documents.
- 9.3 A Certificate of Validity shall be re-issued following an airworthiness review of the aircraft, its maintenance history and records. A summary of what is required to be reviewed is given at Appendix 4 to this Chapter A3-7.

9.4 Where the CAA requires, a satisfactory check flight to an agreed test schedule shall be completed prior to the re-issue of the Certificate of Validity (see paragraph 6.4).

NOTE: For the purposes of the re-issue of a Certificate of Validity, where a flight test is required, this may be conducted using the existing Permit to Fly provided it remains in force. Where the existing Certificate of Validity has expired, a Permit to Fly for test purposes will be required.

9.5 A Certificate of Validity incorporated as part of the Permit to Fly for test or ferry purposes will be issued for a period determined to be adequate to perform the required flight or series of flights, but will not exceed a duration of 12 months.

10 Records

10.1 All relevant design and construction records shall be made available to the CAA for examination and shall not be destroyed without authorisation by the CAA.

10.2 As required by Article 22 and Schedule 6 of the Air Navigation Order, Log book records shall be kept and maintained for the aircraft, engine, and where applicable, variable pitch propellers. Where necessary, worksheets raised in relation to a maintenance activity will form part of the aircraft record.

10.3 Where appropriate, log books shall be supplemented by systems to record and track any relevant airworthiness life limitations, including ultimate and fatigue life limits as well as overhaul requirements applicable to the aircraft type.

10.4 Weight and Balance records shall be kept and maintained in respect of each aircraft.

11 Maintenance

11.1 For the purposes of this Chapter, maintenance is understood to mean scheduled maintenance, overhaul, modification, repair, replacement, defect rectification or compliance with Mandatory Permit Directives and, where appropriate, Airworthiness Directives issued in respect of any component or equipment as may be fitted to the aircraft.

11.2 During the period of validity of a Certificate of Validity the aircraft shall be maintained in an airworthy condition and, where stated on the Permit to Fly, maintenance arrangements must be agreed with the CAA. For aircraft with a Certificate of Validity recommended for renewal by a person approved by the CAA for that purpose, the CAA may specify that the maintenance is carried out and certified in accordance with the procedures contained in the approved organisation's Exposition.

11.3 English language translations of all foreign language publications containing continuing airworthiness information and maintenance data are required to be available.

11.4 Ex-military aircraft of a type specified in BCAR Chapter A8-20, other than ex-military aeroplanes below 2730 kg Maximum Take-off Weight Authorised (MTWA), shall be maintained by an organisation holding BCAR A8-20 approval.

11.5 Non-military aircraft below 2730 kg Maximum Take-off Weight Authorised (MTWA), may also use the procedures described in BCAR Chapter A8-20, with the agreement of the CAA.

12 Permit Maintenance Release

- 12.1 When specified on the conditions of the national Permit to Fly, except for maintenance permitted to be carried out by the pilot (see Appendix 2 to this Chapter A3-7), the aircraft shall be certified as fit for flight following maintenance by the issue of a Permit Maintenance Release (PMR). The PMR supports the continued validity of the Certificate of Validity.
- 12.2 The PMR shall be issued covering the particular maintenance activity carried out and is required for those maintenance tasks defined in paragraph 11.1.
- 12.3 If maintenance is carried out on the aircraft or its equipment whilst operating on a Permit to Fly for test purposes or for ferry purposes, when specified on the conditions associated with the Permit, a PMR shall be issued in respect of the work carried out. The PFRC will also be re-issued.
- 12.4 The aircraft log books/worksheets shall contain particulars of the maintenance carried out and shall include the following certification statement:
'The work recorded above has been completed to my satisfaction and in that respect the aircraft is considered fit for flight.
Signed Authorisation Ref. Date
- 12.5 A PMR shall be issued only by the following:
- a) the holder of an appropriate category aircraft maintenance engineer's licence granted or rendered valid in the United Kingdom who has been specifically authorised by the CAA for the purpose;
 - b) persons specifically authorised by the CAA for the purpose;
 - c) persons specifically approved by the CAA when acting within the appropriate terms of approval.

Appendix 1 to A3-7

Evidence to Substantiate Applications

1 Introduction

Evidence is required to substantiate applications under sub-paragraph 3.1 d) of Chapter A3-7 for the Issue and Renewal of Permits to Fly in respect of Aircraft, the design of which, has previously been accepted by the recognised National Authority of the State of Design.

2 The following requirements apply:

- 2.1 For aircraft in the Intermediate or Complex groups (as defined in BCAR Chapter A8-20, paragraph 1.2.1), the Applicant shall submit evidence to demonstrate that the aircraft type has a safety record in service acceptable to the CAA for its intended use.
- 2.2 The aircraft shall be shown by a competent person to conform to the type to which the established safety record is related.
- 2.3 Used aircraft should be in a condition acceptable to the CAA, have been regularly maintained or overhauled as necessary and relevant records should be complete including in particular those relating to lifed components and Mandatory Permit Directive compliance.
- 2.4 The Applicant shall demonstrate to the satisfaction of the CAA their competence to conduct or arrange for the necessary flight testing of the aircraft as required by the CAA.
- 2.5 The Applicant shall be able to demonstrate their competence and resources to maintain the aircraft in accordance with paragraph 2.3 above, or be suitably approved in accordance with BCAR Chapter A8-20. In addition, the Applicant shall be able to demonstrate their competence to ensure that any modifications necessary to maintain the established standard of airworthiness are determined and embodied.
- 2.6 The Applicant shall be competent to observe any limitations that the CAA may determine having regard to the safety of third parties and occupants during intended operations of the aircraft.
- 2.7 The aircraft shall be equipped to a standard acceptable to the CAA for the intended purpose.

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Appendix 2 to A3-7 Pilot Maintenance

For the purposes of paragraph 12.1, pilot maintenance in respect of aircraft below 2730 kg MTWA to be operated on a Permit to Fly may be carried out in accordance with either the prescribed repairs and replacement privileges in the Air Navigation Order, Section 3 General Regulations; Regulation 16; or for those aircraft with a Permit to Fly validated by a person approved by the CAA for that purpose, pilot maintenance may be performed to the extent permitted by the procedures of that organisation.

NOTE: For pilot maintenance the issue of a Permit Maintenance Release (PMR) is not required. The pilot must enter details of the maintenance carried out and include his pilot's licence number with his signature in the appropriate log books.

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Appendix 3 to A3-7 Permit Flight Release Certificate

For the purposes of 7.3 the format of the permit flight release certificate is as follows.

AIRCRAFT TYPE REGISTRATION

It is hereby certified that the aircraft identified above has been inspected and is considered fit for flight.

This Certificate is valid from until

Signed.....Airframe. Authorisation ref..... Date

Signed.....Engine(s). Authorisation ref.....Date

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Appendix 4 to A3-7 Airworthiness Review

1 Introduction

- 1.1 To satisfy the requirement for an airworthiness review of the aircraft as specified in paragraph 9.3 of Chapter A3-7, a full documented review of the aircraft records shall be carried out by the approved organisation, or the persons accepted for the purpose, in order to be satisfied that:
- a) airframe, engine, and propeller flying hours and associated flight cycles have been properly recorded;
 - b) the pilots operating handbook, flight manual or permit flight conditions is applicable to the aircraft configuration and reflects the latest revision status;
 - c) all the maintenance due on the aircraft according to the approved/accepted maintenance programme has been carried out;
 - d) all known defects have been corrected;
 - e) all applicable Mandatory Permit Directives or Airworthiness Directives, as appropriate, to the components or equipment as may be fitted to the aircraft, have been applied and properly recorded;
 - f) all modifications and repairs applied to the aircraft have been recorded and are approved according to the relevant Chapters of BCAR Section A;
 - g) all service life limited components installed on the aircraft are properly identified, recorded and have not exceeded their approved service life limit;
 - h) all maintenance has been released in accordance with the relevant Chapters of BCAR Section A; and
 - i) the aircraft complies with the latest revision of its CAA type approval or Airworthiness Approval Note, including a physical inspection of the aircraft, its equipment and any required placards and markings.

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Chapter A3-8 'A' Conditions

1 Introduction

1.1 In accordance with Schedule 3 of the Air Navigation Order, an aircraft which does not have a Certificate of Airworthiness duly issued or rendered valid under the law of the United Kingdom shall fly under 'A' Condition only for the purpose of enabling it to:

- a) qualify for the issue or renewal of a Certificate of Airworthiness or the validation thereof after an application has been made for such issue, renewal or validation as the case may be, or to carry out a functional check of a previously approved modification of the aircraft;

NOTE: For the purposes of this BCAR, 'a previously approved modification' shall mean a modification which has previously been approved by the CAA in respect of that aircraft or another aircraft of the same type.

- b) proceed to or from a place at which any inspection, repair, modification, maintenance, approval, test or weighing of, or the installation of equipment in, the aircraft is to take place or has taken place for a purpose referred to in paragraph (a), after any relevant application has been made, or at which the installation of furnishings in, or the painting of, the aircraft is to be undertaken; or

- c) proceed to or from a place at which the aircraft is to be or has been stored.

1.2 An aircraft for which the Certificate of Airworthiness or Certificate of Validation has ceased to be in force by virtue of any of the matters specified in Article 9(7) of the Air Navigation Order, shall fly under 'A' Conditions only for the purpose of enabling it to:

- a) proceed to a place at which any inspection or maintenance required by virtue of Article 9(7)(b)(ii) of the Air Navigation Order is to take place; or

- b) proceed to a place at which any inspection, maintenance or modification required by virtue of Article 9(7)(b)(i) or (c) of the Air Navigation Order is to take place and in respect of which flight the CAA has given permission in writing; or

- c) carry out a functional check, test or in-flight adjustment in connection with the carrying out in a manner approved by the CAA of any overhaul, repair, previously approved modification, inspection or maintenance required by virtue of Article 9(7) of the Air Navigation Order.

1.3 Before an aircraft flies under 'A' Conditions the aircraft and its engines shall be certified as fit for flight. This chapter details the type of certificate required.

NOTE: 'A' Conditions for flight are prescribed in the Air Navigation Order.

2 Certificate of Fitness for Flight

2.1 The Certificate shall be as follows:

AIRCRAFT CON NO ENGINE S/No(s)

It is hereby certified that the aircraft defined hereon has been inspected and is fit for flight provided it is properly loaded.

This Certificate is valid until or until the airworthiness condition of the aircraft is altered, whichever is earlier.

..... **'A' Licence No**

Signed

..... **'C' Licence No**

Signed **CAA Approval No**

2.2 The period of validity shall be stated but shall not exceed 7 days.

2.3 The Certificate shall be issued in duplicate and one copy kept elsewhere than in the aircraft.

2.4 A Certificate of Fitness for Flight shall be issued only by the following:

- a) The holder of an appropriate aircraft maintenance engineer's licence granted or rendered valid in the United Kingdom.
- b) A firm approved by the CAA under BCAR Chapter A8-1, A8-3, or A8-18 and an 'A' rated JAR-145 organisation where the Terms of Approval refer to particular types of aircraft.

2.5 If the original airworthiness condition of the aircraft is affected during the period of validity, the Certificate shall be re-issued.

Chapter A3-9 'B' Conditions

1 Introduction

Flight under 'B' Conditions as prescribed in Schedule 3 of the Air Navigation Order, may only be undertaken by Organisations Approved in accordance with BCAR A8-9.

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Chapter A3-11 Aircraft Radio Installations

1 Application for Radio Installation Licence

An application form, copies of which may be obtained from WT Radio Licensing Surveillance and Spectrum Management, Directorate of Airspace Policy, K6 Gate 6, CAA House, 45-59 Kingsway, London WC2B 6TE, Telephone: 0207 453 6529, Fax: 0207 453 6546, e-mail radio.licensing@dap.caa.co.uk, shall be completed and returned to that address. The Directorate of Airspace Policy will forward a licence to the Applicant, which becomes valid only when Form AD 917 (see paragraph 3.5), 'Certificate of Approval of Aircraft Radio Installation', is issued by the CAA, except that the licence authorises the Applicant to carry out such ground and flight tests, before the CAA issue the Certificate of Approval, as are necessary to comply with paragraph 3.2.

2 Application for Certificate of Approval of Aircraft Radio Installations

- 2.1 For an aircraft not having a Certificate of Airworthiness, the application for a Certificate of Approval of Radio Installation is a routine matter after the Applicant has completed a formal application, on Form CA 3 (see Chapter A3-2), for a Certificate of Airworthiness.
- 2.2 Where the aircraft has already been issued with a Certificate of Airworthiness, and a Certificate of Approval of Aircraft Radio Installation is desired, the Applicant shall complete CAA Form AD 282 in accordance with the Major Modification procedures in Chapter A2-5.
- 2.3 Where a modification, previously approved by the CAA, has been incorporated in the aircraft introducing a radio installation and a Certificate of Approval of Aircraft Radio Installation is desired, the Applicant shall send to the CAA Safety Regulation Group such documents as are necessary to give details of the modification, and also to show that the work has been certified in accordance with the procedures in Chapter A6-7.

3 Approval of Aircraft Radio Installations

- 3.1 **Design.** The Applicant shall ensure that the design of the installation complies with:
 - a) the Requirements in force at the time the application for a Certificate of Approval of Aircraft Radio Installation is received by the CAA;
 - b) such other requirements as the CAA may notify in writing, for a particular installation.
- 3.1.1 All relevant design information, drawings and test reports shall be held at the disposal of the CAA. No such design records shall be destroyed without authorisation from the CAA.
- 3.1.2 Each design drawing shall bear a descriptive title, drawing number, issue number and date of issue. All alterations to drawings shall be made in accordance with a drawing amendment system which will ensure amendment to design records.
- 3.1.3 Immediately an alteration is made to a drawing, whether the alteration is permanent or temporary, the drawing shall be identified with a new issue number and date.

Where an alteration affects the interchangeability of an item in any way, a new part number shall be issued such as to avoid confusion with the original item.

- 3.2 **Survey, Ground and Flight Tests.** The approval of an aircraft radio installation is based on a survey by the CAA, followed by such ground and flight tests as are required in respect of the particular installation, to prove the satisfactory functioning of the installation.
- 3.2.1 The Applicant shall arrange with the CAA in the appropriate area, a convenient time, date, and place, for making the survey.
- 3.2.2 The Applicant shall carry out the flight test, in accordance with the requirements prescribed in the Communications Section (COM) of the United Kingdom Aeronautical Information Publications, 'Air Pilot', together with such other ground and flight tests as may be required by the CAA, in respect of the particular radio installation.
- 3.3 **Radio Flight Test Report.** On the satisfactory completion of the survey and the ground and flight tests, a Radio Flight Test Report shall be forwarded to the CAA, Safety Regulation Group. The Radio Flight Test Report shall include information under the following headings, together with such additional information as is required by the CAA in a particular case:
- a) Type and registration marks of aircraft;
 - b) Type of installation;
 - c) Modification reference number;
 - d) Date and time of test;
 - e) Position and height of the aircraft and details of the radio tests, including particulars of aerials and transmitter(s) used.
- 3.4 **Radio Flight Test Certificate.** A certificate in the following form shall be signed by the pilot, or radio operator, as appropriate, at the conclusion of the flight tests:

I hereby certify that, with the exceptions stated below, the radio installation in the above designated aircraft has been proved to perform satisfactorily in flight the functions for which it is approved.

Exceptions **Signed**

.....

..... **Date**

- 3.5 **Notification of Approval.** The CAA will issue a 'Certificate of Approval of Aircraft Radio Installation' (Form AD 917) to signify approval of the radio installation.

4 Modifications to Aircraft Radio Installations

- 4.1 Application for approval of a modification to an aircraft radio installation shall be made in accordance with the Major Modification procedures in Chapter A2-5.
- 4.2 The Applicant shall ensure that the design of the modification complies with:
- a) the Requirements in force at the time the application for the Major Modification is received by the CAA;

b) such other requirements as the CAA may notify, in writing, for a particular modification.

- 4.3 When a change is made to a component which has already been the subject of a Mandatory Modification and this produces a new or modified component which achieves all the objectives of the previous Mandatory Modification, then the latter modification becomes an acceptable alternative to the previous one, and shall be shown in the Company's modification system and associated documentation.

5 Change of Ownership

- 5.1 A change of aircraft ownership invalidates the Radio Installation Licence; the new owner shall apply for a new licence.

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Sub-section A4
Design and Manufacture of Products
Other Than Aircraft

Chapter A4-2 Type Certification of Engines and Associated Equipment

1 General

The requirements of this paragraph 1 are, except where otherwise indicated, applicable to all engines and associated equipment first type certificated in the UK.

- 1.1 **Introduction.** Engines and associated equipment for use in civil aircraft for which a Certificate of Airworthiness is required must be of approved types. The approval of such engines and equipment will be subject to compliance with the procedures set out in this Chapter A4-2.

NOTE: In respect of engines and associated equipment for use in civil aircraft, for which a Certificate of Airworthiness is required in the Special Category, the CAA may accept proposals which would vary the procedures in this Chapter A4-2.

- 1.1.1 The procedures of this Chapter also apply, in principle, to the approval of Auxiliary Power Units, except that, where appropriate, references to JAR-E should be read as being to JAR-APU.

- 1.2 **Definition of Engine.** An engine used, or intended to be used, for aircraft propulsion. It consists of, at least, those components and equipment necessary for satisfactory functioning and control, but excludes the propeller and its associated equipment.

- 1.3 **Application.** The application for CAA approval of an engine shall be made in accordance with paragraph 2.

- 1.4 **Engine Type Identity** (see Chapter A4-2 Appendix 1). All engines of the same basic type shall have a common designation, and variants thereof shall be identified in a manner acceptable to the CAA, and all such details shall be listed on the Engine Type Certificate, or equivalent approval documents. The designation shall differ from that of any similar engine designed and built to requirements other than JAR-E (see subparagraph 4.3.1 a)).

- 1.4.1 If the ratings of the engine are changed significantly after the engine has been approved, or a significant alteration to the physical standard is made, the identification shall be changed and the approval documents shall be amended accordingly.

- 1.5 **Modular Engines.** Details shall be provided in the relevant engine manuals of the division of the engine into modules (see JAR-1 for definition) giving the nomenclature and clearly defining the boundaries for each module.

2 Application for Approval

- 2.1 Application for the approval of an engine shall be made in writing to the CAA Safety Regulation Group.

- 2.2 The application shall include an undertaking to meet the costs incurred by the CAA during its investigations resulting in the issue of a Type Certificate, the rejection of the application after investigation, or until the application is withdrawn.

- 2.3 The application shall also include an undertaking that the costs incurred by the CAA for work in maintaining the validity of the Type Certificate through modifications to the engine type, and/or amendments to the Type Approval, will be met by the Applicant.

3 Type Approval

- 3.1 Engine Type Certificate and Data Sheet (see Chapter A4–2 Appendix 1). The Applicant will be formally notified of the approval of an engine by the issue of an Engine Type Certificate and an associated Engine Type Certificate Data Sheet.
- 3.2 The Type Certificate will be worded and will contain the information set out in Chapter A4–2 Appendix 1.
- 3.3 The associated Type Certificate Data Sheet will contain at least the information set out in Appendix 1, and will be prepared by the CAA, on the basis of evidence supplied by the engine manufacturer.
- 3.4 Subsequent changes to the approval will be notified by appropriate amendments to the relevant documents.

NOTE: An Engine Type Certificate is related to a particular engine type. The Applicant for a Certificate of Airworthiness in respect of an aircraft is responsible for ensuring compliance with the powerplant installation requirements (including the engine installation flight test requirements).

4 Design and Manufacture

In addition to compliance with paragraph 1, engines designed and manufactured in the UK shall comply with this paragraph 4.

- 4.1 **Engine Build Standard** (see Chapter A4–2 Appendix 1). The physical details of the engine, together with its permitted aircraft service equipment, shall be defined by a list of all components and equipment, compiled in a form agreed by the CAA, which shall be kept up to date by the engine manufacturer. The list shall be divided into two parts:
- Group 1.** This shall list all the components and Group 1 a) and b) equipment, approved as an integral part of the engine in accordance with paragraph 4.2.1, with reference to the relevant drawings, which together constitute the engine type, as agreed by the CAA, and shall include as a minimum those items necessary for satisfactory functioning and control of the engine;
 - Group 2.** This shall list aircraft service equipment accepted in accordance with paragraph 4.2.2 which may be mounted on, or driven by, the engine, and the reference documents quoting the interface design and test requirements which will be applicable to any alternative equipment subsequently used.
- 4.2 **Equipment** (see Chapter A4–2 Appendix 1)
- 4.2.1 **Group 1 Equipment.** For approval as an integral part of the engine, all Group 1 equipment shall comply with the design and test requirements of JAR–E and with a) or b), as appropriate.
- Items of Group 1 equipment for which the engine manufacturer takes full responsibility (Group 1a)), shall have been designed and manufactured in accordance with the airworthiness design and test requirements of the relevant specification (see JAR–E80);
 - Items of Group 1 equipment for which the engine manufacturer does not accept the responsibility for full technical control (Group 1b)), shall have been approved initially in accordance with a procedure similar to the Accessory Procedure of Chapter A4–8, and shall be accepted by the engine manufacturer on the basis of the related Declaration of Design and Performance (DDP) or equivalent document.

4.2.2 **Group 2 Equipment.** Group 2 equipment will be accepted for use on an engine subject to:

- a) the design meeting the interface requirements specified by the engine manufacturer, or otherwise acceptable to the CAA. Conformity with the interface requirements shall be certificated by an Organisation appropriately approved by the CAA;
- b) evidence of satisfactory operation of the engine fitted with the equipment during tests acceptable to the CAA.

NOTE: The procedures for the approval of Group 2 equipment in its own right will be in accordance with Chapter A4–8.

4.3 **Applicable Requirements**

4.3.1 The Applicant shall, through the medium of an organisation approved by the CAA for the purpose (see Chapter A8–1), verify that the engine complies with:

- a) the issue of JAR–E current at the time of application;

NOTE: Any 'national variants' used will be quoted in the approved engine approval documents.

- b) those amendments to JAR–E which have been accepted by the JAR–E Engine Study Group, and which have been notified as having a significant effect on the airworthiness of the engine type;
- c) all special requirements considered by the CAA to be appropriate in view of unconventional features of the engine design;
- d) all special requirements considered by the CAA to be necessary in the light of recent experience from similar engines in service which has revealed problems having a significant effect on airworthiness.

4.3.2 During the certification programme the addition of new requirements will be avoided where possible, but the CAA reserves the right to introduce further requirements where:

- a) development or certification testing of a particular engine, or experience from other similar engines in service, has revealed new problems having a significant effect on airworthiness which are not covered by the requirements previously agreed in accordance with paragraph 4.3.1;
- b) significant design changes have been introduced since the identification of the requirements applicable in accordance with paragraph 4.3.1.

4.3.3 Following the date of application, subsequent new draft requirements may be considered by the CAA, and applied, subject to agreement by the Applicant.

4.3.4 The list of requirements determined in accordance with paragraph 4.3.1 will remain valid for a period of three years from the date of application for approval. Where engine approval has not been accomplished, or where it is clear that engine approval will not be accomplished, within the three year period the Applicant may:

- a) make a new application, which would be treated as if it were an original application;
or
- b) request an extension of the original application, and comply with the applicable requirements which were effective at a date to be selected by the Applicant, but not earlier than the date preceding the forecast date for the issue of engine approval by a period of three years.

NOTE: An exception to this will be if all the requirements except the 'Tests in Precipitation or Ice-Forming Conditions' (see JAR-E780) have been met satisfactorily, the latter not having been completed for reasons beyond the control of the engine manufacturer, e.g. non-availability of a suitable air intake from the aircraft manufacturer. In such circumstances, the CAA would indicate in writing to the engine manufacturer that compliance with all the relevant requirements had been established except for this aspect, and the date of such a communication would be regarded as the terminal date in complying with the three year rule.

4.3.5 **Subsequent Engine Variants.** Variants of existing types will normally be approved on the basis of the requirements applicable to the original certification of that engine type. If, however, the variant has significant design or performance changes, or service experience of the previously approved models is unsatisfactory for airworthiness reasons, compliance with later requirements may be required.

4.4 **Statement of Compliance.** The appropriate Approved Organisation (see paragraph 4.3.1) shall forward to the CAA a Statement of Compliance signed by an authorised signatory of the particular organisation, and worded in the following form:

STATEMENT OF COMPLIANCE

Engine Type

Approval Classification

I certify that with the exceptions stated below, engines of the above mentioned type (as defined in) comply with the appropriate requirements contained in Joint Aviation Requirements, JAR-E (including Amendment No:.....) dated , and with the additional requirements notified by the CAA in their letter(s) reference

dated

Exceptions

.....

Signed

Firm

CAA Approval No.

Date

4.5 **Variation or Cancellation of Approval.** At suitable times the CAA will review, with the respective design organisations concerned, the engines and associated equipment which have been approved to determine whether the approvals are still required or justified, or whether a variation is necessary, e.g. as a result of the engines or equipment having become obsolete or obsolescent. On the basis of this review the CAA will make such changes or cancellations as may be appropriate to the circumstances.

4.6 **Modifications and Amendments**

4.6.1 The approval of the CAA shall be obtained for all modifications. Where applicable, the necessary information shall be supplied to the CAA so that the Engine Type Certificate Data Sheet may be amended. Where modifications to approved Group 1b) equipment affect the associated DDP the equipment manufacturer shall complete and forward to the CAA a CAA Form AD 70.

NOTE: Modifications and amendments to design drawings not affecting airworthiness performance, interchangeability, fits and clearances, weight and installations, may be introduced by an appropriate Approved Organisation without prior approval by the CAA; but at suitable intervals CAA approval will have to be obtained.

- 4.6.2 The Applicant shall (normally through the medium of the original Organisation approved for the design) ensure that the proposed modification is such that the engine, or equipment, when modified, complies with a) and b):
- a) The relevant design and test requirements in force at the time the engine or equipment was originally approved.
 - b) Such other design and test requirements as the CAA may have notified in writing to the Applicant, as being applicable to the engine, or item of equipment concerned.
- 4.6.3 Unless otherwise agreed by the CAA, modifications to Group 1 equipment shall be the subject of an engine modification. Changes to Group 2 equipment shall also be the subject of an engine modification if the change is such as to introduce a significant difference from the original submission made in accordance with paragraph 4.2.2.
- 4.6.4 In some cases an engine modification may have an effect on the engine installation (e.g. a change to the shape or area coverage of a heat shield), or it may require amendments to Flight Manual limitations, but not require a change of engine type identity. In these circumstances, before approving the engine modification, the CAA shall normally be provided with confirmation that the change is approved in respect of the aircraft. This shall be indicated through an aircraft 'cover' modification, or by written confirmation that the aircraft manufacturer accepts the change. Alternatively, if such prior approval cannot be obtained, the need for final approval by the aircraft manufacturer shall be made known in the published modification bulletin.
- NOTE:** The procedure for approval of modifications to aircraft is prescribed in Chapter A2-5.
- 4.6.5 Manufacturers shall maintain a system acceptable to the CAA to ensure that all changes to the processes of manufacture of major components, or changes in the source of supply of major components or their materials are controlled, and are acceptable to the manufacturer's design and quality control departments. Such changes may require tests to be made before the change can be approved and, depending on the magnitude and significance of the testing necessary, the CAA may require the change to be classified as a modification. Even when modification action is not considered necessary, the need to provide different identification of those parts manufactured after the change, shall be considered.
- NOTE:** The following are examples of major components of gas turbine engines: turbine discs, compressor drums and discs, main shafting, main line bearings, suspension mounting links and associated casings and major transmission gears on turbo-prop and turbo-shaft engines, including all components which are subject to detailed CAA agreement in respect of quality control (in accordance with JAR-E515).
- 4.6.6 Repair schemes shall be classified as modifications, and shall normally be approved through the medium of the original Approved Organisation, or through an organisation specifically approved for the purpose by the CAA.
- 4.6.7 Where modifications to approved equipment, assemblies or modules affect unit interchangeability, or are of such a nature as to require amendment of approval documents, or any documents associated with the Certificate of Airworthiness, a separate type or designation reference shall be allocated to the modified equipment, assembly, or module.

- 4.6.8 Modification documents shall consist of a Title Sheet, which shall bear a modification reference number, issue number and date, a description of the modification, together with a list of parts, assemblies and modules affected by the modification and, where necessary, drawings giving particulars of the parts before and after modification.
- 4.6.9 Approval of an engine modification, or amendment, will be indicated by the signature of a CAA Surveyor, preferably on the Modification or Amendment Title Sheet.
- 4.6.10
- a) Modifications and inspections considered essential for airworthiness, will be classified as mandatory by the CAA, in consultation, where appropriate, with the Approved Organisation and affected Operators; the compliance date, limiting flying hours, cycles, or other details when the prescribed action must be taken, will be decided, taking into account the degree of urgency, the availability of modified parts, and the amount of work required to complete the modification/inspection.
 - b) Where a further modification is made to a component which has already been the subject of a mandatory modification, and this produces a new or modified component which achieves all the objectives of the previous mandatory modification, then the later modification becomes an acceptable alternative to the previous one, and this shall be shown in the Company's modification system and associated documentation.
- 4.6.11 All work undertaken in the incorporation of a modification to an engine, module or equipment shall be supervised either by an Organisation approved by the CAA for the purpose or by an appropriately licensed aircraft maintenance engineer. Before the work is finally certified, the Approved Organisation, or the licensed aircraft maintenance engineer, shall be satisfied that the work has been carried out, inspected, and tested where necessary, for conformity with the specifications, drawings and instructions relating to the approved design. (See A6-7).
- 4.6.12 Full particulars of the work done to incorporate the modification shall be entered in the relevant log book, quoting the reference number of the modification. A Certificate of Release to Service shall be attached thereto (see A6-7).

5 Construction

- 5.1 All engine components manufactured in the United Kingdom shall be made from approved materials and shall be produced under the supervision of an Organisation approved by the CAA for the purpose. The engine shall be assembled and tested by an Organisation approved by the CAA for the purpose.
- 5.2 All engines, modules and equipment shall be to, at least, a minimum modification standard associated with an approved period between overhauls (or equivalent maintenance programme) for the engine, module or equipment concerned.
- 5.3 All series engines, modules, equipment and components, shall be marked with such serial numbers as may be necessary to enable the corresponding inspection records to be adequately correlated.

6 Tests

- 6.1 The Applicant shall be responsible for arranging all tests required in connection with approval and shall ensure that all test facilities, including all measuring instruments and equipment, are to the satisfaction of the CAA.

- 6.2 Before commencing type tests, the Applicant shall obtain CAA agreement to the relevant test schedules. The Applicant shall notify the CAA of the date on which it is proposed to commence the type tests. Adequate notice of the strip examination of an engine or of equipment, which has completed a type test, shall be given to the CAA supervising Surveyor.

7 Records

- 7.1 All relevant design information, drawings and test reports shall be held at the disposal of the CAA, and shall be retained until two years have elapsed after each engine of the type has been permanently withdrawn from use. Where design changes have been introduced, the original data shall be retained until two years have elapsed after it is reasonably certain that all the existing parts affected have been brought into conformity with the revised standard, or have been permanently withdrawn from use.
- 7.2 Each design drawing shall bear a descriptive title, drawing number, issue number and date of issue. All alterations to drawings shall be made in accordance with a drawing amendment system such as will ensure amendment to design records.
- 7.3 Immediately an alteration is made to a drawing, whether the alteration is permanent or temporary, the drawing shall be identified with a new issue number and date. Where an alteration affects the interchangeability of an item in any way, a new part number shall be issued to avoid confusion with the original item.
- 7.4 The inspection records and log books, for each newly constructed engine shall contain an Engine Inspection and Test Certificate (see 7.8 e)) and a record of the modification standard of the engine¹.
- 7.5 The inspection records and log books, for each overhauled, repaired, or modified engine shall contain¹:
- a) a Certificate of Release to Service (see A6-7);
 - b) where appropriate, a certified statement listing, by serial numbers, all parts in the engine which are subject to retirement or ultimate (scrap) life (see A5-3, 4 and A7-4, 4) and the hours and/or number of cycles already completed by each part;
 - c) a record of the modification standard of the engine and its equipment;
 - d) a list of mandatory instructions which have been complied with.
- 7.6 In respect of modular engines, a log card shall be provided for each series module and shall be deemed part of the engine log book so long as the module is fitted to the engine. The log book of each engine shall either make reference to, or contain, the log cards of all the particular modules fitted to that engine.
- a) The log cards of modules shall be such as to enable an up-to-date record to be kept of:
 - i) the nomenclature of the module, its type designation and identity, and its serial number;
 - ii) the current modification standard of the module;
 - iii) details of the identified engines to which the module has been fitted and removed, the flying hours and flight cycles achieved by the module with each engine, and the name of the Operator concerned;

1. None of the documents to which reference is made in 7.4 and 7.5 takes the place of an Approved Certificate where such a Certificate is applicable (see SUB-SECTION A8). However, when such a Certificate is issued, the certificate of Release to Service referred to in 7.5 a) need not be included in the log book.

- iv) the serial numbers of all parts of the module which are subject to retirement or ultimate (scrap) life (see Chapter A5-3, paragraph 4 and Chapter A7-4, paragraph 4) and the total hours and/or number of cycles already completed by each such part;
- v) details of compliance with mandatory instructions, completed critical inspections, and completed overhauls, repairs, replacements and modifications.

7.7 All relevant inspection records shall be made available to the CAA for examination on request.

7.8 Inspection records shall be retained as follows:

- a) Inspection records relevant to certification tests shall be retained for two years after the approval of the type of engine has been cancelled;
- b) Inspection records relevant to the manufacture of designated critical parts shall be retained for two years after the parts have been permanently withdrawn from use;
- c) Inspection records relevant to the construction of a new engine or sub-unit shall be retained for two years after the assembly has been completely overhauled;
- d) Inspection records relevant to the repair, modification or overhaul of an engine or sub-unit shall be retained for two years after the assembly has been subjected to a further complete overhaul, except that records relevant to the safe lives of designated critical parts shall be retained for two years after the parts have been permanently withdrawn from use. Where rework to an approved specification has been accepted as an alternative to overhaul, compliance may be shown by preserving records of the two preceding applications of the rework specification provided that the history of components marked in accordance with JAR-E is retained (see Chapter A6-7);
- e) Engine Inspection and Test Certificate

A copy of each completed Engine Inspection and Test Certificate shall be kept by the manufacturer. The information given in the Engine Inspection and Test Certificate shall include the following:

- i) The title 'Engine Inspection and Test Certificate';
- ii) The name of the manufacturer issuing the Certificate;
- iii) The engine type;
- iv) The reference and date of CAA engine approval or the latest issue of the Engine Type Certificate Data Sheet;
- v) The manufacturer's serial number of the engine;
- vi) Category of release (e.g. Experimental Flight, Special Category, Transport Category (Passenger));
- vii) Reference to the inspection and test records of the manufacturer or overhaul Organisation, as appropriate;
- viii) Any special remarks or endorsements, if applicable;
- ix) A certificate worded in the following form:

I hereby certify that the construction and test of the above mentioned engine have been carried out in accordance with British Civil Airworthiness Requirements.

Signed

Firm

CAA Approval No.

Date

NOTE: Where it is desired, for contractual purposes, to issue an Engine Inspection and Test Certificate for other than a new engine, this may be done by an organisation approved for the overhaul of the engine type. In such cases, the words 'construction and test' should be replaced by appropriate words describing the work carried out, e.g. 'overhaul and test', and reference to the appropriate records should be quoted under vii). Such a certificate does not replace the Certificate of Release to Service required by A6-7.

8 Manuals

- 8.1 Approved manuals shall be provided containing instructions for installing, operating, maintaining and overhauling the engine and its associated equipment (see A5-3, A7-3 and A7-4).
- 8.2 Engine performance data, compatible with the engine acceptance and operating limitations, shall be provided for aircraft certification performance, handling and stressing purposes. The data should be such that the power/thrust of a 'minimum' and a 'maximum' engine can be derived and shall include means of determining the effects on performance of variations of engine bleed and power off-take, forward speed, ambient pressure, temperature, humidity.

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Appendix 1 to A4-2

Engines and Associated Equipment

Issued, 1st July, 1989

1 This Appendix contains supplementary information for guidance in complying with the requirements of Chapter A4-2.

2 Engine Identity (see Chapter A4-2, paragraph 1.4)

An engine type is defined for certification purposes by a designation given by the manufacturer, and for each variant an identification. The physical details are defined in a Drawing Introduction Sheet (DIS) or equivalent which is a list of all components and equipment.

3 Engine drawing Introduction Sheet (see Chapter A4-2, paragraph 4.1).

3.1 The DIS is divided into the following list of items:

a) **Group 1.** This is a list of components and equipment which constitute the engine type as agreed in accordance with Chapter A4-2, paragraph 4.1. The equipment in Group 1 may be sub-divided as follows:

i) **Group 1(a) Equipment.** Equipment for which the full technical control is the responsibility of the engine manufacturer's Approved Organisation to the same extent as an engine component and therefore not separately identified in the approval documentation. The engine manufacturer is responsible to the CAA for all airworthiness aspects of the equipment including the provision of the manuals. The engine manufacturer satisfies the CAA that the technical competence and control procedures utilised are adequate for the purpose.

ii) **Group 1(b) Equipment.** Equipment partly controlled by the engine manufacturer's Approved Organisation and partly by the equipment manufacturer's Approved Organisation.

b) **Group 2.** This is a list of all aircraft service equipment which the CAA agrees may be driven by the engine, or fitted to it, without hazard to the engine. The engine manufacturer's responsibility for this equipment may be limited to a statement of interface requirements.

3.2 If the definition of Group 1 in Chapter A4-2, paragraph 4.1 were interpreted literally, many aircraft items would be included, e.g. to start an engine an electric battery is usually required, and to control the engine a throttle lever and linkage is necessary. It is, therefore, accepted that the engine designer's complete responsibility is limited and that the position of this limit will, to some extent, be arbitrary. To assist in this demarcation, the following guidance is given:

a) Parts, failure of which could cause direct damage to the engine (e.g. disintegration of a glow plug or an igniter plug), should be included in Group 1.

b) Any part, which has a mechanical drive connection with the engine and is necessary for the satisfactory functioning and control of the engine should be included in Group 1.

- c) Group 1 need not include any items required to provide non-mechanical inputs to the engine if the nature of the input can be completely described. Thus, if the voltage, timing, current, etc., for a starter or igniter plug can be clearly specified, the items required to provide this electrical input need not be included. Similar considerations apply to inputs of fuel, air, etc.
- d) Any transmitter associated with the safe functioning of the engine should be included, but the indicator need not be included although its accuracy should be specified.

4 Equipment Approval Procedure (see Chapter A4-2, paragraph 4.2)

4.1 At the time of application for approval of an engine the engine manufacturer should divide the equipment into Groups 1 and 2 as described in sub-paragraphs 4.2 a) and b) and present the lists to the CAA for agreement or appropriate revision. The following approval procedures then apply:

- a) **Group 1 a) Equipment.** Compliance with the relevant requirements, agreed by the CAA, is the responsibility of the engine manufacturer. The requirements are specified in the engine manufacturer's equipment specification. Acceptance of the equipment is the responsibility of the engine manufacturer but items of significance to airworthiness will be evaluated by the CAA. Approval is awarded as an integral part of the investigation into the engine design, and in these cases a Declaration of Design and Performance (DDP) is not required.
- b) **Group 1 b) Equipment.** A DDP is provided to identify the equipment manufacturer's share of the design responsibility. Compliance with the relevant requirements, agreed by the CAA, for equipment in this group, is the responsibility of the equipment manufacturer within the limits given in the equipment DDP. For other conditions relevant to airworthiness not covered by the DDP the engine manufacturer is responsible. Where agreed, the acceptance of the DDP will be the responsibility of the engine manufacturer; otherwise the equipment approval will be negotiated between the CAA and the equipment manufacturer.
- c) **Group 2 Equipment.** The equipment in the Group is fitted to the engine, unless otherwise agreed by the CAA, for the relevant parts of the engine Type Tests. It is included on the engine approval documents when compliance has been established with the interface requirements defined by the engine manufacturer or otherwise acceptable to CAA. Certification of this equipment in its own right is separate from that of the basic engine. Acceptance by the CAA of a DIS does not imply that any units listed in Group 2 have been approved, but only that they may be fitted to the engine without an adverse effect on the engine.

5 Engine Type Certificate

The Engine Type Certificate will be worded in the following way:

This is to certify that the type of engine, together with any variants, named in this certificate is accepted as complying with the Airworthiness Standards specified in the Engine Type Certificate Data Sheet.

- 5.1 The Certificate will show the Name and Type Designation; including variants, of the engine to which it refers, and will bear a serial number. Reference will be made on the reverse to engine variants and to the associated Type Certificate Data Sheets.

6 Engine Type Certificate Data Sheet

The Engine Type Certificate Data Sheet will contain, at least, the following information:

- a) A CAA serial number;
- b) The designation of the approved engine type(s);
- c) Identification of the relevant Type Certificate;
- d) The name of the engine manufacturer;
- e) The certification basis (i.e. the identification of the airworthiness requirements met);
- f) A statement detailing the use for which the engine is approved (e.g. aeroplane, helicopter, category of operation);
- g) Details of the engine, including a general description, weight and leading particulars;
- h) Engine ratings and acceptance conditions;
- i) Operating limitations, including:
 - i) Fuels approved, showing the limits to which the use is approved;
 - ii) Oils approved, showing the limits to which the use is approved;
 - iii) Statement on use of compressor air bleeds (if applicable);
- j) Types of propellers (if applicable);
- k) Special features (e.g. thrust reverser, anti-icing details);
- l) Reference to Manuals (i.e. Installation, Maintenance, Overhaul, Repair Manuals).

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Chapter A4-4 Type Certification of Propellers

1 General

The requirements of this paragraph 1 are, except where otherwise indicated, applicable to all propellers and associated equipment.

- 1.1 **Introduction.** Propellers and associated equipment for use in civil aircraft for which a Certificate of Airworthiness is required, must be of Approved types. The Approval of such propellers and equipment will be subject to compliance with the procedures set out in this Chapter A4-4.

NOTE: In respect of propellers and associated equipment for use in civil aircraft for which a Certificate of Airworthiness is required in the Special Category, particularly amateur-built and ultra-light aircraft, the CAA may accept proposals which would vary the procedures in this Chapter A4-4.

- 1.2 **Application.** Application for CAA Approval of a propeller shall be made in writing to the CAA Safety Regulation Group, and shall be accompanied by a declaration giving details of the propeller design together with details of the engine or engine/aircraft combination for which Approval is sought. The Applicant shall include an undertaking to meet the costs incurred by the CAA during its investigation resulting in propeller Approval, the rejection of the application after investigation, or until the application is withdrawn, and also subsequent work in maintaining the validity of the Approval through modifications to the propeller type and/or amendments to the Type Approval.

NOTE: Propellers are finally Approved in association with a defined engine/aircraft application. However, if requested by the Applicant the CAA will be prepared to indicate Preliminary Approval when compliance has been established with those requirements which can be met prior to the propeller being selected for, and fitted to, a particular aircraft, i.e. those requirements applicable to a propeller/engine combination only (see paragraph 2.3.5).

- 1.3 **Propeller Type Identity.** All propellers of the same basic type shall have a common designation, and variants thereof shall be identified in a manner acceptable to the CAA. In respect of a propeller designed and constructed in the United Kingdom, the designation shall differ from that of any similar propeller designed and built to requirements other than JAR-P (see sub-paragraph 2.3.1 a)).

- 1.3.1 If the rating(s) of the engine and/or the flight envelope of the aircraft to which the propeller Approval relates are changed significantly after the propeller has received Preliminary or Final Approval, or a significant alteration to the physical standard of any feature of the installation is made, the Approval will be reviewed, and if necessary, the identification shall be changed.

2 Compliance

- 2.1 **Propeller Build Standard.** The physical details of the propellers shall be defined by a list of all components and equipment, compiled in a form agreed by the CAA, which shall be kept up to date by the propeller manufacturer.

- 2.2 **Equipment.** The equipment associated with the propeller will be Approved as an integral part of the propeller. To obtain such approval the equipment shall meet the following requirements:

- a) The airworthiness design and test requirements of the relevant specification (see JAR-P30).
- b) The relevant design and test requirements of JAR-P, Section 4, Sub-section C5, as part of the propeller.

NOTE: The CAA will approve individual items of equipment in relation to a particular type of propeller on compliance with the relevant design requirements and completion of the appropriate tests prescribed in a) and b), but before approving equipment for use in a particular aircraft, further investigation and tests, as appropriate to the equipment/propeller/engine/airframe combination, may be required.

2.3 Applicable Requirements

2.3.1 The Applicant shall, through the medium of an Organisation approved by the CAA for the purpose (see A8-1), verify that the propeller design complies with:

- a) the issue of JAR-P current at the time of application;

NOTE: Where a national variant has been invoked in place of the JAR text, this will be identified in the appropriate propeller Approval.

- b) those amendments to JAR-P which have been accepted by the Engine Requirements Co-ordinating Committee, and which have been notified as having a significant effect on the airworthiness of the propeller type;
- c) all special requirements considered by the CAA to be appropriate in view of unconventional features of the propeller design or intended use of the propeller;
- d) all special requirements considered by the CAA to be necessary in the light of recent experience from similar propellers in service which has revealed problems having a significant effect on airworthiness.

2.3.2 During the ensuing certification programme the addition of new requirements will be avoided where possible, but the CAA reserves the right to introduce further requirements where:

- a) development or certification testing of a particular propeller or experience from other similar propellers in service has revealed new problems having a significant effect on airworthiness which are not covered by the requirements previously agreed in accordance with 2.3.1;
- b) significant design changes have been introduced since the identification of the requirements applicable in accordance with 2.3.1.

2.3.3 Following the date of application, subsequent new draft requirements may be considered by the CAA, and applied, subject to agreement by the Applicant.

2.3.4 The list of requirements determined in accordance with 2.3.1 will remain valid for a period of three years from the date of application for Approval. Where propeller Approval has not been accomplished, or where it is clear that propeller Approval will not be accomplished, within the three year period, the Applicant may:

- a) make a new application, which would be treated as if it were an original application; or
- b) request an extension of the original application, and comply with the applicable requirements which were effective at a date to be selected by the Applicant, but not earlier than the date preceding the forecast date for the issue of propeller Approval by a period of three years.

2.3.5 The following requirements of JAR-P, Section 4 will not be required to be met for the granting of Preliminary Approval:

C5-2,1, in so far as it related to flight conditions. C5-2,4.1, C5-2,4.2, C5-2,6, C5-4,3.1.3, C5-4,3.1.5, C5-4,6, in so far as these paragraphs relate to flight conditions Schedule 1,6. Schedule 2,5.2. Schedule 2,6.2.

NOTE: For the purpose of Preliminary Approval, assumptions will have to be made in respect of the installed conditions which may eventually be encountered. Preliminary Approval will be considered against such assumptions, and will be qualified accordingly.

- 2.3.6 **Subsequent Propeller Variants.** Variants of existing types will normally be Approved on the basis of the requirements applicable to the original certification of that propeller type. If, however, the variant has significant design or performance changes, or service experience of the previously Approved models is unsatisfactory for airworthiness reasons, compliance with later requirements may be required.
- 2.4 **Statement of Compliance.** The appropriate Approved Organisation (see 2.3.1) shall forward to the CAA a 'Statement of Compliance' signed by an authorised signatory of that Organisation, and worded in the following form:

STATEMENT OF COMPLIANCE

Propeller Type

Approval Classification

I certify that with the exceptions stated below, propellers of the above mentioned type (as defined in) comply with the appropriate requirements contained in Joint Aviation Requirements, JAR-P (including Amendment No.....) dated, and with the additional requirements notified by the CAA in their letter(s) reference

dated **Exceptions**

..... **Signed**

Firm **CAA Approval No.**

Date

- 2.5 **Approval.** Upon compliance with the relevant design requirements and completion of the appropriate tests, the CAA will notify the Applicant of the Approval of a propeller by the issue of a Propeller Type Certificate and an associated Propeller Type Certificate Data Sheet. Subsequent changes to the approval will be notified by amendments to the relevant documents.
- 2.6 **Modifications and Amendments**
- 2.6.1 The Approval of the CAA shall be obtained for all modifications. Where applicable, the necessary information shall be supplied to the CAA so that the relevant document may be amended.
- NOTE:** Modifications and amendments to design drawings not affecting airworthiness, performance, interchangeability, fits and clearances, weight, and installations, may be introduced by an appropriate Approved Organisation without prior approval by the CAA; but at suitable intervals CAA Approval will have to be obtained.
- 2.6.2 The Applicant shall (normally through the medium of the original Organisation Approved for the design) ensure that the proposed modification is such that the propeller or equipment, when modified, complies with a) and b):

- a) The relevant design and test requirements in force at the time the propeller or equipment was originally Approved;
 - b) Such other design and test requirements as the CAA may have notified in writing to the Applicant, as being applicable to the propeller or item of equipment concerned.
- 2.6.3 Unless otherwise agreed by the CAA, a modification to propeller equipment shall also be promulgated as a modification to the associated propeller.
- 2.6.4 In some cases a propeller modification may have an effect on the installation or it may require amendments to Flight Manual limitations, but not require a change of propeller type identity. In these circumstances, before approving the propeller modification, the CAA shall normally be provided with confirmation that the change is Approved in respect of the aircraft. This shall be indicated through an aircraft 'cover' modification, or by written confirmation that the aircraft manufacturer accepts the change. Alternatively, if such prior approval cannot be obtained, the need for final Approval by the aircraft manufacturer shall be made known in the published modification bulletin.
- NOTE:** The procedure for Approval of modifications to aircraft is prescribed in Chapter A2-5.
- 2.6.5 Manufacturers shall maintain a system acceptable to the CAA to ensure that all changes to the processes of manufacture of major components, or changes in the source of supply of major components or their materials are controlled, and are acceptable to the manufacturer's design and quality control departments. Such changes may require tests to be made before the change can be Approved, and depending on the magnitude and significance of the testing necessary, the CAA may require the change to be classified as a modification. Even when modification action is not considered necessary, the need to provide different identification of those parts manufactured after the change shall be considered.
- 2.6.6 Salvage/Repair schemes shall be classified as modifications, and shall normally be Approved either through the medium of the original Approved Organisation, or through an Organisation specifically Approved for the purpose by the CAA.
- 2.6.7 Where modifications to Approved equipment or assemblies affect unit interchangeability, or are of such a nature as to require amendment of the Approval, or any documents associated with the Certificate of Airworthiness, a separate type or designation reference shall be allocated to the modified equipment or assembly.
- 2.6.8 Modification documents shall consist of a Title Sheet, which shall bear a modification reference number, issue number, and date, a description of the modification, together with a list of parts and assemblies affected by the modification and, where necessary, drawings giving particulars of the parts before and after modification.
- 2.6.9 Approval of a propeller modification, or amendment, will be indicated by the signature of a CAA Surveyor, preferably on the master tracing of the Modification or Amendment Title Sheet.
- 2.6.10 a) Modifications and inspections considered essential for airworthiness will be classified as mandatory by the CAA, in consultation, where appropriate, with the Approved Organisation; the compliance date, limiting flying hours, cycles, or other details when the prescribed action must be taken, will be decided, taking into account the degree of urgency, the availability of modified parts and the amount of work required to complete the modification/inspection;
- b) Where a further modification is made to a component which has already been the subject of a mandatory modification, and this produces a new or modified component which achieves all the objectives of the previous mandatory

modification, then the later modification becomes an acceptable alternative to the previous one, and this shall be shown in the Company's modification system and associated documentation.

- 2.6.11 All work undertaken in the incorporation of a modification to a propeller or equipment shall be supervised either by an Organisation Approved by the CAA for the purpose or by an appropriately licensed aircraft maintenance engineer. Before the work is finally certified, the Approved Organisation, or the licensed aircraft maintenance engineer, shall be satisfied that the work has been carried out, inspected, and tested where necessary, for conformity with the specifications, drawings and instructions relating to the Approved design.
- 2.6.12 Full particulars of the work done to incorporate the modification shall be entered in the relevant log book, quoting the reference number of the modification. A Certificate of Release to Service shall be attached thereto (see Chapter A6–7).

2.7 **Construction**

- 2.7.1 All propeller components shall be made from Approved materials and shall be produced under the supervision of an Organisation Approved by the CAA for the purpose. The propeller shall be assembled and tested by an Organisation Approved by the CAA for the purpose.
- 2.7.2 All propellers and equipment shall be to, at least, a minimum modification standard associated with an Approved period between overhauls (or equivalent maintenance programme) for the propeller or equipment concerned.
- 2.7.3 All series propellers, equipment and components shall be marked with such serial numbers as may be necessary to enable the corresponding inspection records to be adequately correlated.

2.8 **Tests**

- 2.8.1 The Applicant shall be responsible for arranging all tests required in connection with Approval, and shall ensure that all test facilities, including all measuring instruments and equipment, are to the satisfaction of the CAA.
- 2.8.2 Before commencing type tests, the Applicant shall obtain CAA agreement to the relevant test schedules. The Applicant shall notify the CAA of the date on which it is proposed to commence the type tests. Adequate notice of the strip examination of a propeller or of equipment, which has completed a type test, shall be given to the CAA.
- 2.8.3 Before commencing acceptance tests of series or overhauled propellers, a schedule of the proposed tests shall have been agreed by, and a copy shall have been given to, the CAA.

2.9 **Records**

- 2.9.1 All relevant design information, drawings and test reports shall be held at the disposal of the CAA, and shall be retained until two years have elapsed after each propeller of the type has been permanently withdrawn from use. Where design changes have been introduced, the original data shall be retained until two years have elapsed after it is reasonably certain that all the existing parts affected have been brought into conformity with the revised standard, or have been permanently withdrawn from use.
- 2.9.2 Each design drawing shall bear a descriptive title, drawing number, issue number and date of issue. All alterations to drawings shall be made in accordance with a drawing amendment system such as will ensure amendment to design records.
- 2.9.3 Immediately an alteration is made to a drawing, whether the alteration is permanent or temporary, the drawing shall be identified with a new issue number and date.

Where an alteration affects the interchangeability of an item in any way, a new part number shall be issued to avoid confusion with the original item.

- 2.9.4 The modification standard of each new and overhauled propeller and equipment shall be recorded in the log book of the propeller concerned.
- 2.9.5 All relevant inspection records shall be made available to the CAA for examination on request.
- 2.9.6 Inspection records shall be retained as follows:
- a) Inspection records relating to certification tests shall be retained for two years after the Approval of the type of propeller has been cancelled;
 - b) Inspection records relevant to the manufacture of designated critical parts shall be retained for two years after the parts have been permanently withdrawn from use;
 - c) Inspection records relevant to the construction of a new propeller, or sub-unit, shall be retained for two years after the assembly has been completely overhauled;
 - d) Inspection records relevant to the repair, modification or overhaul of a propeller, or sub-unit, shall be retained for two years after the assembly has been subjected to a further complete overhaul, except that records relevant to the safe lives of designated critical parts shall be retained for two years after the parts have been permanently withdrawn from use. Where rework to an Approved specification has been accepted as an alternative to overhaul, compliance may be shown by preserving records of the two preceding applications of the rework specification.
- 2.10 **Manuals.** Approved manuals shall be provided containing instructions for installing, operating, maintaining and overhauling the propeller and its associated equipment (see Chapters A5-3 and A7-4).
- 2.11 **Variation or Cancellation of Approval.** At suitable times the CAA will review, with the respective design Organisations concerned, the propeller and associated equipment which have been Approved, to determine whether the Approvals are still required or justified, or whether a variation is necessary, e.g. as a result of the propeller or equipment having become obsolete or obsolescent. On the basis of this review, the CAA will make such changes or cancellations as may be appropriate to the circumstances.

Chapter A4-8 Design and Approval of Aircraft Equipment and Accessories

1 General

1.1 **Introduction.** This Chapter A4-8 sets out procedures whereby aircraft equipment and accessories may be approved, accepted and certified as suitable for installation in aircraft for which a Certificate of Airworthiness is desired.

1.2 **Applicability.** The requirements and procedures set out in this Chapter are applicable to:

a) all aircraft equipment and accessories intended for installation in aircraft, excluding:

i) engines, Auxiliary Power Units, propellers and radio apparatus (see Chapters A4-2, A4-4 and A4-10 respectively);

ii) items wholly designed by a United Kingdom aircraft manufacturer, where such items are intended to be installed only in that aircraft manufacturer's own specific aircraft design, in which case they will be covered by the aircraft type record. (See Chapter A3-2).

NOTE: Such items could include standard parts or components (e.g. electronic components).

b) the approval of items, which are required to be approved, produced under the supervision of Organisations approved by the CAA in accordance with Sub-Section A8;

c) the acceptance and certification of items, which are not required to be approved;

d) the installation of items into aircraft registered in the United Kingdom.

1.3 **Applications.** Applications in respect of the procedures of this Chapter A4-8 will be accepted only from Organisations which are approved to accept responsibility for the design, manufacture and quality assurance, as appropriate, of the airframe part or equipment. (See sub-paragraph 1.2 b)).

2 Definitions

For the purposes of this Chapter A4-8 the following definitions shall apply.

2.1 **Items.** Aircraft equipment and accessories intended to be installed in aircraft (excluding engines, propellers and radio apparatus).

2.1.1 **Component.** An item for which the procedure followed is that prescribed in paragraph 5.3.

2.1.2 **Accessory.** An item for which the procedure followed is that prescribed in paragraph 5.4.

2.2 **Uncontrolled Items.** Those aircraft equipment and accessories, the installation or failure of which would not adversely affect the airworthiness and the safe operation of an aircraft and as such are not required to be approved, together with those items specifically exempted from approval by the Air Navigation Order (ANO).

2.3 **Controlled Items.** Those aircraft equipment and accessories:

- a) prescribed in the Air Navigation Order and not specifically exempted from approval;
- b) prescribed in the Requirements;
- c) on which the airworthiness and safe operation of an aircraft depend;
- d) the installation or failure of which could adversely affect the airworthiness and safe operation of an aircraft.

3 Standard Parts

- 3.1 The procedure prescribed in this Chapter A4–8 need not be followed for AGS and other standard parts complying with national or international specifications or standards recognised by the CAA.

NOTE: This is intended to cover minor items complying with AGS, SBAC, BSI or similar standards, where these are limited to manufacturing drawings from which the approved Organisation can assess the Items as suitable for the intended application.

- 3.2 The approved Organisation using such standard parts shall accept responsibility for the manner of their use.

4 Uncontrolled Items

Uncontrolled Items are not required to be approved, but when installed in an aircraft registered in the United Kingdom, compliance shall be shown with the requirements of this paragraph 4.

NOTE: An approved Organisation responsible for the installation of Uncontrolled Items in aircraft may require these Items to be manufactured under the supervision of an appropriately approved Organisation.

4.1 General

- 4.1.1 An Organisation approved for design, shall submit to the CAA for acceptance, a certificate that it has satisfied itself that no Uncontrolled Items installed in the aircraft will, in themselves, constitute a danger to the aircraft, together with a list of the Items (except for those which obviously could have no safety significance). When so requested, the Organisation shall supply to the CAA a summary of evidence on which the certification was based. (See paragraph 6 for cabin service equipment.)

- 4.1.2 An Organisation approved for design incorporating Uncontrolled Items in an aircraft, shall submit to the CAA for acceptance a certificate that it has satisfied itself that the installation of such Items does not adversely affect the airworthiness and safe operation of the aircraft concerned, and that they are so installed that in the event of their failure or malfunction the Items will not endanger the aircraft or its occupants.

NOTE: For new aircraft types the certifications in paragraphs 4.1.1 and 4.1.2 are covered by the usual Certificate of Design for the aircraft type. Where items are introduced as modifications, the CAA may require a further Certificate of Design. (See Chapter A6–6.)

5 Controlled Items - Designed and Manufactured under the Supervision of Organisations Approved by the CAA

- 5.1 **General.** In respect of Controlled Items for which approval by the CAA in accordance with this paragraph 5 is sought, it shall be a condition of approval that the

Item be designed, tested and manufactured in accordance with the relevant airworthiness requirements and applicable specifications, under the supervision of Organisations approved for the purpose by the CAA. (See paragraph 6 for cabin service equipment.)

5.2 **Approval Procedure.** The procedure to be followed for approval shall be the Component Procedure prescribed in paragraph 5.3 or the Accessory Procedure prescribed in paragraph 5.4, as determined by paragraphs 5.2.1 to 5.2.3.

5.2.1 Where the Item is designed for a particular use in a particular aircraft type, the Component Procedure shall normally apply (but see sub-paragraph 1.2 a)). Where it is proposed that the Accessory Procedure should be used for such an Item, the prior agreement of the CAA shall be sought.

5.2.2 Where the Item is classified as Mandatory Equipment as defined in the Air Navigation Order or in the appropriate Section of the Requirements, e.g. Section G, for rotorcraft, the Accessory Procedure shall apply, unless agreed otherwise by the CAA.

5.2.3 Where the Item is designed for general use other than as described in paragraphs 5.2.1 or 5.2.2, either the Accessory Procedure or the Component Procedure shall be applied at the discretion of the Applicant, subject to the agreement of the CAA.

5.3 **Component Procedure**

5.3.1 Where the Component Procedure is applied, the CAA will not normally be involved in the investigation of the component. The CAA does, however, reserve the right to carry out such investigations as it considers necessary in a particular case. In the event of the CAA becoming involved, the Organisation making use of the component will be advised. Any cost incurred by the CAA in the investigation will be charged to that Organisation, unless other specific arrangements have been agreed between the Organisation(s) concerned and the CAA.

5.3.2 The responsibility for the design and, as necessary, the type testing of the component, shall be accepted by Organisations approved for the purpose.

a) The Organisation accepting responsibility for design of the component shall supply to the Organisation accepting responsibility for the design of the installation embodying the component:

i) for major components, e.g. landing gear, a Component Type Record and Certificate of Design; or

ii) for other than i), a Declaration of Design and Performance (DDP) (see paragraph 7); or

iii) drawings/specifications;

together with such other information as may be required by the Organisation accepting responsibility for the design of the installation embodying the Component.

NOTE: A Component Type Record (see Chapter A3-2) will only be required, when such a document is considered by the Organisation accepting responsibility for the design of the installation embodying the component, to be more suitable than a DDP.

b) Where a responsibility for the design of the component is wholly taken by the Organisation accepting responsibility for the design of the installation, that Organisation may either prepare the Component Type Record or DDP, as appropriate, or incorporate the data into the Certificate of Design and Type Record of the aircraft. (See Chapter A3-2 paragraph 3.4).

c) Where the component is certified for a particular use in a particular aircraft, this use shall be stated in the associated documentation.

5.3.3 The Organisation accepting responsibility for the design of the installation shall be satisfied from the Component Type Record or the DDP or drawings/specifications and any other information or testing it considers necessary, that the component is suitable for installation in the aircraft. Where the component will be obtainable from an Organisation not approved by the CAA, the Organisation accepting responsibility for the design of the installation shall establish to its own satisfaction and to the satisfaction of the CAA, the adequacy of the procedures for control of quality (see Chapter A8-1).

5.3.4 The Organisation incorporating a component into an aircraft shall establish to its own satisfaction and to the satisfaction of the CAA that the component was designed and manufactured to relevant airworthiness requirements, and applicable specifications. The Organisation shall certify that the aircraft installation is satisfactory.

NOTE: Supporting documentation issued by an Organisation appropriately approved by the CAA may be taken into account in showing compliance.

5.4 **Accessory Procedure**

5.4.1 **Application.** Where the Accessory Procedure is applied, the Applicant (normally, but not necessarily, the manufacturer) shall complete CAA Form AD 70, and shall forward it to the CAA Safety Regulation Group together with the correct fee, in accordance with the CAA Scheme of Charges. The total charge will be based on the cost of the investigation (regardless of the outcome) and the CAA will, during the course, or upon completion of the investigation, notify the Applicant in writing of any charges due.

5.4.2 **General.** The Item shall conform to a specification (frequently the manufacturer's own specification) acceptable to the CAA, and shall be certificated by a DDP (see paragraph 7) by an Organisation (normally, but not necessarily, the manufacturer) approved for the design of such Items. The CAA shall have the right to disclose the contents of a DDP relating to the Item to persons interested in the installation of such Items. The manufacturer of the Item is normally expected to make the DDP available to such persons.

5.4.3 **Documentation.** The Applicant shall provide the following:

- a) A copy of the Specification(s) with which the Item complies;
- b) Drawings and such descriptive information as will adequately define the Item to the CAA;

NOTE: It may be necessary for the CAA to require a physical examination of the Item.

- c) A Declaration of Design and Performance (DDP) (see paragraph 7);
- d) Type test or other evidence showing conformance with the Specification(s) with which the Item complies;
- e) When requested by the CAA, one copy of the Maintenance, Overhaul and Repair Manuals and the Installation Manual, where appropriate.

5.4.4 **Approval**

a) **Full Approval.** The CAA, when satisfied, will approve the Item in relation to the DDP, and this approval will be signified by the issue of a CAA Approval Reference 'E' number.

b) **Provisional Approval.** Where sufficient evidence is not available to permit full approval, provisional approval may be granted for a limited period and shall be

reviewed annually. In general, provisional approval will be limited to approval for use in a particular aircraft type, and will only be granted where there is reason to suppose that the Item will, in due course, qualify for full approval. Provisional approval will not be granted unless the associated DDP includes details of any limitations which prevent the granting of full approval and is made available to both the CAA and the user.

NOTE: Because an Item is provisionally approved, it does not follow that full approval will be granted. In most cases it indicates that sufficient evidence for full approval has not been established.

- c) An Organisation with appropriate terms of approval for design may then incorporate the Item into products or aircraft of its own design, provided that the DDP shows the Item to be suitable.

6 Cabin Service Equipment

6.1 **General.** In respect of cabin service equipment (e.g. galley inserts, passenger in-flight entertainment):

- a) the CAA may consider that the safety aspect of certain items need further investigation prior to acceptance in accordance with paragraph 4.1.1, in which case the procedure of paragraph 6.2 shall, in consultation with the Organisation which submitted the certificate, be applied;
- b) the CAA may, at the request of the Applicant and prior to the Certification required in paragraph 4.1.1, investigate the safety aspects of specific Items, and when satisfied apply the Safety Registration Procedure of sub-paragraphs 6.2 a) to d);
- c) Where, as a result of the investigation, it is decided that the Item should be classified as a Controlled Item, the procedures of paragraph 5 shall apply.

6.2 Procedures

- a) Where CAA investigation is to be carried out in accordance with sub-paragraph 6.1 a) or b), the Applicant shall complete CAA Form AD 70, and shall forward it to the CAA Safety Regulation Group together with the correct fee, in accordance with the CAA Scheme of Charges. The total charge will be based on the cost of the investigation (regardless of the outcome) and the CAA will, during the course or upon completion of the investigation, notify any further charges in writing.
- b) The Equipment shall conform to a Specification (frequently the manufacturer's own Specification) acceptable to the CAA and shall be certificated by a DDP submitted by a suitably approved Organisation. The CAA shall have the right to disclose the contents of a DDP relating to the Equipment to persons interested in the installation of such Equipment. The manufacturer of the Item is normally expected to make the DDP available to such persons.
- c) The CAA, when satisfied, will register the Item in relation only to the safety aspects of the Item, as recorded in the DDP. This Registration will be signified by the issue of a CAA SA (Safety Acceptance) Registration Number.

NOTE: Such registration does not in any way imply CAA acceptance of the performance of the Item.

- d) An Organisation with appropriate terms of approval for design may then incorporate the registered Item provided that the DDP shows it to be suitable.

7 Declaration of Design and Performance

- 7.1 A standard form of DDP for international use is given in ISO Recommendation No. R224 and a British version is given in BS 3G100:¹ Part 1, entitled 'Declarations Identifications and Construction'. This will require to be adapted according to the nature of the Item. The Declaration shall contain at least the following information:
- Particulars identifying the Item, its design standard, including reference to the Specification(s) to which it is designed, and a record of drawings.
 - The rated performance of the Item, either directly or by reference to other supplementary documents where necessary.
 - The degree of compliance with the Requirements stating the issue number of the Section concerned.
 - Reference to relevant test reports.
 - Any limiting conditions applying to the use of the Item. This shall include limitations implicit in the design (e.g. working and ultimate pressure or loads, rating, working and maximum voltage and current, accuracy of instruments) declarations required by the governing specifications (e.g. by British Standard 3G100)¹ and the ability of the Item to work under various environmental conditions (e.g. acceleration, vibration, altitude, temperature and humidity).

NOTE: For example, an item of electrical Equipment may require the following information:

- Voltage range;
- Frequency range;
- Time rating and duty cycle;
- Altitude and temperature range appropriate to rating;
- Climatic test classification and waterproofness grade as defined in BS 3G100¹;
- Vibration grading, acceleration class and grade, explosion-proofness category, fire resistance classification, compass safe distance and radio interference characteristics, all as defined in BS 3G100¹;
- Minimum life or overhaul period in hours or cycles of operations;
- Fluid resistance;
- Any departures from the governing specifications.

- 7.2 The Declaration shall bear the following statement made and signed by an authorised signatory:

I hereby certify that the information contained in this Declaration of Design and Performance is accurate and is made under the authority of the Civil Aviation Authority, Approval Ref..... (Company Name) cannot accept responsibility for the satisfactory operation of Items used outside the conditions given above without their agreement.

8 Manuals

- 8.1 In respect of Items to which the Accessory or Appliance Registration Procedure has been applied, the Applicant shall prepare the appropriate Maintenance, Overhaul and Repair Manuals as required by Chapter A5-3.
- 8.2 In respect of Items to which the Component or Cabin Service Equipment Safety Registration Procedure has been applied, the appropriate Organisation approved for

1. EUROCAE ED14A and RTCA DO 160 are other environmental test Standards which are specifically recognised.

design, in conjunction with the Organisation approved for manufacture, shall prepare the Maintenance, Overhaul and Repair Manuals, or such parts thereof as are appropriate, as required by Chapter A5–3.

9 Modifications

9.1 Modifications to Items to which the procedures of this Chapter A4–8 have been applied may affect the original approval or certification. The Applicant shall notify the CAA or the user, as appropriate, of the intention to change or modify the design, or where a new 'Mark' is to be introduced. Where required by the CAA, CAA Form AD 70 shall be completed and forwarded to the CAA, Safety Regulation Group.

NOTE: The procedures for approval of modifications to aircraft are prescribed in Chapter A2–5.

9.2 Where modifications of Items to which the procedures of this Chapter A4–8 have been applied affect physical or functional interchangeability, a separate type (or part) number shall be allocated to the modified Item. Less significant changes shall be identified in an acceptable manner.

9.3 Where the modification invalidates any of the information included in the Type Record for the Item or the Declaration of Design and Performance, the document(s) shall be re-issued with account taken of the modification.

9.4 The Applicant shall keep a master record of all modifications and this shall be made available to the CAA on request.

10 Mandatory Modifications and Inspections

Modifications and inspections considered essential for airworthiness will be classified as mandatory by the CAA in consultation with the approved Organisations concerned and the aircraft manufacturer, as appropriate, in accordance with the procedures of Chapter A5–6.

11 Equipment Register

11.1 The Applicant shall maintain a register of Items designed for use on aircraft. The register shall be in a form acceptable to the CAA, and shall be made available to the CAA on request.

11.2 Arrangements shall be made to keep the register up to date in respect of new or modified Items. An overall review of Items listed in the register shall be made at periods not exceeding three years, with a view to recommending to the CAA cancellations of approval, registration or restriction of use of obsolete or obsolescent Items.

NOTE: The terms of approval in accordance with Sub-Section A8 are such that essential records may not be destroyed without authorisation from the CAA.

12 FAA TSO Procedure

Where USA regulations require direct FAA TSO Approval, the FAA requires to validate the CAA certification and the CAA will act on behalf of the Applicant and will follow, so far as is possible, similar procedures. This is an activity on behalf of the USA Federal Aviation Administration and is not directly covered by this Chapter A4–8. Where such approval is required, application should be made to CAA Safety Regulation Group, Aviation House, Gatwick.

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Chapter A4-10 Radio Apparatus

1 Introduction

The requirements and procedures prescribed in this Chapter A4–10 are applicable to radio (and radar) apparatus, i.e, apparatus concerned with information transfer by the use of radiated electro-magnetic waves.

2 Definition

Radio Apparatus is defined as a discrete radio appliance which can readily be connected into, and removed from, an aircraft radio system.

NOTE: The term Radio Apparatus is intended to include such associated devices as aerials, transducers, service selection systems, radio navigational computers, display systems and power supply units concerned with the radio installation.

3 Prototype Apparatus

3.1 **Application for Approval.** Form AD 70, copies of which may be obtained from the CAA Safety Regulation Group, shall be completed and returned, together with all relevant available data concerning the apparatus and the correct fee, in accordance with the CAA Scheme of Charges. The total charge is based on the cost of the investigation, whether or not formal approval is granted. The CAA will, during the course, or upon completion of the investigation, notify the Applicant in writing of any further charges due.

3.2 **General.** The apparatus shall conform to a specification, frequently the maker's own specification, acceptable to the CAA, and shall be covered by a Declaration of Design and Performance (DDP) prepared and certified in accordance with BCAR Section R, Chapter R3–1. The CAA shall have the right to disclose the contents of a DDP relating to an approved item to those interested in such items.

NOTE: Radio apparatus may be installed in an aircraft provided the DDP shows it to be suitable. The responsibility for showing compliance with all requirements when the apparatus is installed rests with the particular Approved Organisation (see BCAR Section R, Chapter R1–1).

3.3 Tests

- a) Tests shall be made to an acceptable specification in accordance with BCAR Section R, Chapters R3–2 or R3–3, as appropriate.
- b) The Applicant shall ensure that all tests are carried out by an appropriately approved organisation, and that test reports are submitted to the CAA.
- c) Test facilities, including measuring instruments and equipment, shall be acceptable to the CAA.
- d) A schedule of tests shall be agreed with the CAA.
- e) Adequate notice of intention to make tests shall be given, and suitable arrangements shall be made for the CAA representatives to witness the tests.

3.4 **Manuals.** Manuals covering installation, Maintenance and Overhaul, which comply with A5–3, shall be provided for each item of radio apparatus.

4 Series Apparatus

- 4.1 Series Radio Apparatus shall be certified by an appropriately approved organisation (see Sub-Section A8).
- 4.2 Each item of series Radio Apparatus shall be marked as follows:
- Manufacturer's name;
 - Manufacturer's type designation;
 - Manufacturer's serial number;
 - Modification state;
 - Power supply characteristics;
 - The compass safe distance when this exceeds 30 cm (12 in);
 - To show any special requirements for installation, e.g. specific orientation.

5 Design Records

- 5.1 All relevant design information, drawings and test reports shall be held at the disposal of the CAA. No such design records shall be destroyed without authorisation from the CAA.
- 5.2 Each design drawing shall bear a descriptive title, drawing number, issue number, and date of issue. All alterations to drawings shall be made in accordance with a drawing amendment system such as will ensure amendment to design records.
- 5.3 Immediately an alteration is made to a drawing, whether the alteration is permanent or temporary, the drawing shall be identified with a new issue number and date. Where an alteration affects the interchangeability of any item in any way, a new part number shall be issued such as to avoid confusion with the original item.
- 5.4 The Production Test Specification shall constitute part of the design records.

6 Overhaul, Repair and Replacement

The procedures for overhaul, repair and replacement are given in A6-7.

7 Modifications

- 7.1 Where modifications affect the performance or other airworthiness characteristics of an item, a Form AD 70 shall be completed and returned as detailed in 3.1. Two copies of the details of the modification shall be forwarded to the CAA, preferably at an early stage in the design.
- 7.2 Where modifications are classified as mandatory by the CAA, a date shall be agreed with the CAA by which all affected apparatus is to be modified, that date to be quoted in the modification documents.
- 7.3 The DDP and the appropriate Manuals shall be amended where the modification affects the information in these documents.

NOTE: The general procedures for approval of modifications are prescribed in A2-5.

8 Inspection of Apparatus

Radio apparatus shall be made available to enable the CAA to inspect it, as necessary, for the purpose of approval.

Sub-section A5
Continued Airworthiness –
Responsibilities of the Type Design
Organisation

Chapter A5-1 General

1 Aircraft Type Design Organisations

- 1.1 The Aircraft Type Design Organisation (who will normally be the holder of the Type Certificate or equivalent) is responsible (except as in 4 below) for ensuring:
- a) that the Type Record associated with the Type Certification standard of the aircraft, including the Data Sheet and other associated documents, and all approved variants and modifications introduced with their agreement since the original Type Certification, is held, maintained and up-dated as necessary;
 - b) that the build standard records of all aircraft released by them for Airworthiness Certification under the Type Certificate are held;
 - c) that where possible, service experience is monitored to provide them with information on problems and defects affecting aircraft in service;
 - d) that all problems and defects affecting airworthiness, of which they become aware, are investigated and, where appropriate, corrective action made available. This may be by introducing modifications and/or by promulgating instructions/advice to users by Service Bulletins, Flight Manual amendments or by other suitable means;
 - e) that the investigation carried out under d) identifies those significant problems and defects affecting the intended airworthiness certification standard of the aircraft and that the CAA is notified accordingly;
 - f) that appropriate consultation takes place with the CAA and aircraft users when determining those actions essential for airworthiness reasons, based on the result of service or other experience. (Modifications, Inspections, or changes to approved documentation, subsequently promulgated as Airworthiness Directives);
 - g) that master copies of all Flight and Technical Manuals are maintained and up-dated as necessary to reflect changes for which they are responsible. Amendments to manuals shall be published and distributed as required by Chapter A5-3.
- 1.2 The Type Design Organisation shall retain these responsibilities until there are, to their knowledge, no aircraft of the type registered and eligible for airworthiness certification in the UK and elsewhere under the Type Certificate.

2 Type Design Organisation - Engines and Propellers

- 2.1 The Type Design Organisation for an engine or a propeller (who will normally be the holder of the Type Certificate or equivalent) is responsible for ensuring:
- a) that the Type Record associated with the Type Certification standard of the engine or propeller, including the Data Sheet and other associated documents, and all approved variants and modifications introduced with their agreement since the original Type Certification, is held, maintained and up-dated as necessary;
 - b) that the build standard records of all engines or propellers released by them under the Type Certificate are held;
 - c) where possible, service experience is monitored to provide them with information on problems and defects affecting engines or propellers in service;

- d) that all problems and defects affecting airworthiness, of which they become aware, are investigated and, where appropriate, corrective action made available. This may be by introducing modifications and/or by promulgating instructions/ advice to users by Service Bulletins or by other suitable means;
 - e) that the investigation carried out under d) identifies those significant problems and defects affecting the intended airworthiness certification standard of the engine or propeller and that the CAA is notified accordingly;
 - f) that appropriate consultation takes place with the CAA and any appropriate aircraft Type Design Organisation or users, to determine and publish those actions essential for airworthiness reasons, based on the result of service or other experience. (Modifications, Inspections, or changes to approved documentation, subsequently promulgated as Airworthiness Directives);
 - g) that master copies of all Technical Manuals are maintained and up-dated as necessary to reflect changes for which they are responsible. Amendments to manuals shall be published and distributed as required by Chapter A5-3.
- 2.2 The Type Design Organisation shall retain these responsibilities until there are no engines or propellers of the type eligible under the Type Certificate.

3 Variation or Cancellation of Type Approval

- 3.1 **Variation or Cancellation of Type Approval.** At suitable times the CAA will review, with the respective design organisations concerned, the Type Designs which have been certificated to determine whether the Type Certificates (or other CAA Type Approval) are still required or justified, or whether a variation is necessary, e.g. as a result of the aircraft type, engine or propeller having become obsolete or obsolescent. On the basis of this review the CAA will make such changes or cancellations as may be appropriate to the circumstances.
- 3.2 In the event that the organisation holding a Type Certificate either ceases to function, or fails to discharge the responsibilities in 1 or 3, that organisation will be required to surrender the Type Certificate. Under these circumstances, where another organisation exists or can be formed to discharge the responsibilities of 1 or 3, transfer of the Type Certificate to that organisation will be considered. Where no such arrangements can be made, the Type Certificate will be cancelled.
- 3.3 Where no organisation is able to undertake the appropriate continued airworthiness responsibilities for a particular aircraft type and the CAA is unable to directly adopt such responsibilities (see 5 below), aircraft of the type will no longer be eligible for the issue of a Certificate of Airworthiness (A3-2 paragraph 1.6), but may be eligible for the issue of a Permit to Fly in accordance with A3-7.

4 Type Responsibility Agreement

- 4.1 There are a number of old/vintage aircraft types of UK manufacture of which examples have held valid UK Certificates of Airworthiness, but the original Type Design Organisation or a suitable alternative (see 3.2 above) no longer exists or no longer provides continued airworthiness support for the type. In such cases the CAA may be satisfied that an alternative organisation is able to undertake the functions of paragraphs d), e) and f) in 1.1 above. This level of support is considered to be the minimum to ensure that the CAA is able to satisfy the continued airworthiness requirements of ICAO Annex 8.

- 4.2 If a suitable organisation agrees to accept these responsibilities, then a Type Responsibility Agreement will be executed between the CAA and the organisation. (See Appendix to this A5-1 for the capabilities required of such an organisation). An Agreement of this nature will then enable the CAA to maintain the Certificate of Airworthiness status (see A3-2, paragraph 1.6) of such aircraft types.
- 4.3 In such cases, where the engine and/or propeller are also no longer supported in accordance with 2 above, they will be considered to be part of the aircraft and their continued airworthiness will also be monitored under the terms of the Type Responsibility Agreement.
- 4.4 Only one such Type Responsibility Agreement will be entered into by the CAA for any particular aircraft type.

5 Responsibility Carried Directly by CAA

In cases where the Type Design Organisation ceases to function or fails to discharge their responsibilities, or where a Type Responsibility Agreement is withdrawn or cancelled, the CAA will generally assess the possibility of an alternative organisation being found to take over the responsibilities within a reasonable time-scale. If this is considered likely, the CAA may maintain the Certificate of Airworthiness status (see A3-2, paragraph 1.6) for the aircraft of the type for the interim period, by taking direct responsibility for the continued airworthiness of the type in accordance with ICAO Annex 8. The decision whether or not to undertake the responsibility and the length of time for which the CAA is prepared to undertake this will be dependent on the complexity of the type and the numbers in service.

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Appendix 1 to A5-1 Type Responsibility Agreements - Required Capabilities for Organisations

- 1** In order that the CAA is able to meet its responsibilities for the type in accordance with ICAO Annex 8 Part 2 paragraph 4.2.2, the CAA must be satisfied that the organisation has the capability to accomplish the following:
 - a) To notify all registered owners¹ of the designated type, that they should report all problems and defects affecting airworthiness to that organisation.
 - b) To review all such reported problems and defects and where appropriate recommend corrective action.
 - c) Where the nature of the problem or defect has significant safety of flight implications² notify the CAA and undertake in co-operation with the CAA to determine and promulgate any necessary actions.

- 2** In entering into the Agreement, the organisation must be prepared to accept and accomplish these responsibilities.

- 3** In order to be able to exercise the responsibilities in 1 above, for the simpler old aircraft types (including their engines and propellers where appropriate), the organisation must have a good working knowledge of the aircraft type, but need not have an extensive understanding of the aircraft design. As a minimum, the organisation should have direct access to:
 - Maintenance and/or Overhaul Manuals etc.
 - Flight Manual or equivalent.Depending on the number of the type remaining in service, and the significance of particular design features, other assets may be required as follows:
 - Access to manufacturers drawings.
 - Access to a source of supply of spare parts.
 - Information relating to the Type Record.

- 4** The above responsibilities do not necessitate that the organisation has to hold a CAA Design Approval (A8-1 or A8-8) but some form of CAA recognition of responsibility and capability such as a Maintenance Approval (A8-15) will generally be required.

- 5** Where any rectification action arising out of paragraph 1c) above necessitates a major modification to be developed, the design and manufacture of the modification will have to be undertaken by suitably approved organisations in accordance with A2-5.

1. The list of registered owners will be supplied by the CAA.

2. Guidance on the criteria for reportable safety of flight issues will be provided by the CAA.

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Chapter A5-2 Maintenance Review Board

1 Introduction

- 1.1 This Chapter A5–2 gives guidance on the procedures for conducting a Maintenance Review Board (MRB) for a new aircraft type of UK construction, to establish an initial Maintenance Programme prior to certification. Industry involvement in MRB procedures and the production of the MRB Report are also described.

2 General Procedures

- 2.1 CAA Safety Regulation Group will decide in consultation with the Type Design Organisation whether an MRB is to be established for a new aircraft type. Prior consultation will take place with the Type Design Organisation and the following procedures will normally apply to aircraft, the MTWA of which exceeds 5700 kg, intended for Transport Category certification (see A3–2).
- 2.2 MRB procedures may also be applied to individual types of powerplant and major equipment where alternative fits are available for the new aircraft, or for retrofit action to previously certificated aircraft. Individual MRB Reports will, where applicable, be referred to in the MRB Report for the aircraft.
- 2.3 The MRB Report resulting from these procedures will contain the initial maintenance and inspection requirements which form the basis for each Operator to produce and develop his Maintenance Programme. (See A7–5 and CAP 418.¹) The Type Design Organisation will produce the Report for submission to the CAA for Approval and subsequent revisions must also be Approved by the CAA.
- 2.4 The published MRB Report does not constitute a complete maintenance schedule/ programme in a form that an intended Operator may submit to the CAA for Approval for his operation. The Type Design Organisation is required to produce its recommended maintenance programme, e.g. Recommended Maintenance Schedule, Maintenance Planning Guide, which will reflect the MRB Report requirements together with the additional activities needed to maintain the aircraft in service (see A7–5).
- 2.5 Operators, may, as an alternative to themselves producing a maintenance programme based on this MRB Report, submit the Type Design Organisation's Recommended Programme to the CAA for Approval to satisfy the requirements of A7–5.

3 MRB Membership and Policy Management

- 3.1 The MRB Chairman will be appointed by the CAA and will normally be the Surveyor-in-Charge, or a Senior Surveyor, for the area in which the Type Design Organisation (or powerplant/major equipment manufacturer as appropriate) is located.
- 3.2 The MRB will be composed of CAA staff of the particular disciplines and numbers to reflect the size and complexity of the aircraft/powerplant/equipment under review.

1. CAP 418 entitled "Condition Monitored Maintenance – an Explanatory Handbook" is available from the CAA's printers, whose details are given on the inside cover of this publication.

Observers to the various industry Working Groups (see 4.2) will be nominated by the Chairman, where necessary, from the MRB members.

- 3.3 Representatives from foreign Airworthiness Authorities may be invited by the CAA to provide MRB members where the initial or early delivery of the aircraft is to an overseas Operator.
- 3.4 Maintenance Proposals (MP) produced by the industry Steering Committee (see 4.1) will be assessed by the MRB. When all outstanding items have been resolved, the Type Design Organisation will produce and submit the MRB Report to the Chairman for Approval.
- 3.5 The Chairman will be responsible for the establishment and control of MRB programme policy, attendance, time scales and standards to be applied by industry. He will co-ordinate CAA activities such that guidance and consultation are made available by attending Steering Committee meetings when necessary.

4 Maintenance Programme Development and Procedures

To produce the MRB Report, which contains the initial maintenance and inspection requirements, the procedures and processes defined in Airline/Manufacturer Maintenance Program Planning Document – MSG3, or an alternative procedure agreed by CAA, will be applied.

4.1 Industry Steering Committee

- 4.1.1 Management of the detailed activities of the programme is the responsibility of the Steering Committee. This Committee should consist of representatives/specialists from the following, as appropriate:

- Type Design Organisation
- Engine/APU Manufacturers
- Major Equipment Manufacturers
- Airlines/Operators
- Airworthiness Authorities (part time)
- Other members as decided by the Steering Committee or MRB Chairman.

- 4.1.2 The Steering Committee should establish the types of Working Groups and their participants, that are to be used to generate the technical and operational information for the programme. Details of the working Group subjects and membership should be supplied to the MRB Chairman, who will nominate the Airworthiness Authority observers.
- 4.1.3 In addition to directing the activities of the Working Groups and other supporting tasks, the Steering Committee is responsible for ensuring that all committee and group members are familiar with Maintenance Steering Group (MSG) procedures and logic analysis, and that training is made available where necessary, including technical subjects if applicable.
- 4.1.4 The Maintenance Proposals (MP) produced by the Working Groups should be assessed by the Steering Committee, revised where necessary, and the completed MP presented to the MRB Chairman, together with all necessary supporting information, for MRB consideration.

4.2 Working Groups

- 4.2.1 Each Working Group is responsible for proposing the initial maintenance and inspection tasks for their nominated subject areas. The Chairman and members are

nominated by the Steering committee and should normally consists of representatives from:

| Manufacturer/Type Design Organisation
Airlines/Operators
Observers.

4.2.2 Individual groups should apply the MSG (or equivalent) analyses, as decided by the MRB, to the following areas, as appropriate:

Airframe general (Zonal)
Structures
Propulsion
Systems and Components
Avionics.

4.2.3 Within each Working Group the manufacturer is responsible for the major input and effort regarding logic analysis, the supply of test data and the provisioning of technical information. The types of test programmes, the validity of safety assessment methods, structural tests and inspection criteria, etc., must be accepted by the MRB Chairman, through the Steering Committee, before Working Group activities proceed.

4.2.4 The Working Groups should progressively supply to the Steering Committee the maintenance proposals, supporting analysis data and other justification for each completed area of responsibility.

4.2.5 Occasionally, the Steering Committee may request a group to re-assess a particular proposal or vary the original concept of establishing a task. The group Chairman is responsible for co-ordinating and controlling such activities and should ensure that the Steering Committee is kept informed of any problems, delays, etc., in addition to supplying routine progress reports.

5 MRB Report Approval and Revision

5.1 When the MRB is satisfied that all outstanding points resulting from the MP have been resolved, the MRB Chairman will inform the Type Design Organisation that the Report may be produced for Approval and publication.

5.2 The Type Design Organisation should publish the MRB Report, endorsed with CAA/MRB Approval, and distribute it as part of the Continued Airworthiness material, e.g. Maintenance Manuals, Service Bulletins, required for Type Certification.

5.3 Periodic revisions to the MRB Report may be necessary to reflect service experience, the Type Design Organisation's continuing test programmes and, where applicable, changes to the philosophy or methods by which maintenance tasks are derived.

5.4 Prior to the Report being published, the MRB will normally decide whether the full, or part, re-convening of the MRB is necessary to implement the revision process. Where a regular revision programme is not deemed necessary, the CAA or Industry may request revisions to the Report based on individual or joint experience.

5.5 Regular revision action should be processed under normal MRB procedures. Non-regular revision requests should be co-ordinated by the Type Design Organisation and submitted with full supporting evidence to the CAA for assessment and Approval.

6 Maintenance Review Board Report

6.1 **General.** The purpose of the Report is to provide an acceptable basis from which individual Operators may produce their Maintenance Programmes as required by the CAA or by an overseas authority in the case of foreign registered aircraft.

6.2 Production and Contents of the Report

6.2.1 **Maintenance Proposals.** Maintenance Proposals (MP) shall be produced jointly by the Type Design Organisation, major equipment manufacturers and, if possible, intended Operators, using a logic analysis process agreed by the CAA. The Type Design Organisation shall submit the completed MP to the MRB for review, and shall provide any necessary supporting information. The MRB will notify the Type Design Organisation of any changes required to the MP which, in the finally accepted form, will constitute the MRB Report.

6.2.2 **Report Content.** The Report shall contain at least the following:

- a) A reference number, issue number and date;
- b) A title identifying the particular aircraft type and model(s);
- c) An Index using ATA Specification 100, or a format acceptable to the CAA in accordance with A7-4 for subject presentation;
- d) An introduction stating the standard against which the document has been produced (e.g. MSG-3, EMSG);
- e) Where an aircraft type has significant optional or alternative systems, equipment or installations, these shall be identified in the Report;
- f) A statement in flying time, cycles or calendar time, as applicable, for any limitation in the initial period of aircraft operation at the time of issue of the Report, e.g. the structural inspection programme may have been established for the first 12,000 cycles of operation only;
- g) A definition of the operating duty cycle and approximate annual utilisation assumed in production of the maintenance requirements, together with a statement of action to be taken in respect of aircraft using significantly different operating criteria;
- h) A description of any rules relating to sampling programmes where these form a part of the maintenance programme;
- i) Aircraft Zone or Area designation, Access and Panel charts. These may be identified by reference to some other document controlled by the manufacturer;
- j) Procedures by which the inherent safety and reliability of the aircraft, its systems and equipment will be assured on a continuing basis;
- k) A listing in ATA Specification 100 order (or an alternative acceptable to the CAA) of all items, systems or structures where analysis has shown that a maintenance task is required. A description of the task is to be given in each case together with the periods, stated in flying hours and/or cycles or elapsed time, at which the task is to be applied;
- l) A listing of all zones or areas to which a maintenance task has been found by analysis, to apply together with a description of the task in each case and periods, stated in flying hours and/or cycles or elapsed time at which the task is to be applied;

- m) Identification of those tasks which analysis has shown to be required for safety and also task required for compliance with certification requirements;
- n) A Glossary of Terms including, in particular, definitions of the maintenance tasks specified in the Report;
- o) A statement requiring that the effectiveness of the application of Maintenance Programmes based upon the MRB Report is to be monitored, either by individual Operators, or by the Type Design Organisation. Such monitoring may be achieved by a Condition Monitored Maintenance Programme, (see A6-2 Appendix 1) or by any other method accepted by the CAA in a particular case, but shall include, as a minimum, all items identified by the Report as significant in respect of their failure effect on safety or reliability.

7 Report Approval

The Report will be approved by the MRB Chairman on behalf of the CAA.

8 Report Publication

The Type Design Organisation shall publish and distribute the Report. Copies shall be provided to the CAA as required.

9 Report Review and Revision

The Report shall be reviewed periodically by the CAA and Type Design Organisation in the light of experience gained during its application. Where changes to the Report are necessary these shall be notified by Service Bulletin action, or by other means acceptable to the CAA, pending revision of the Report. Major changes to the Report may necessitate the re-convening of the MRB and could result in the Report being revised or re-issued. All revisions or re-issue will be Approved by the CAA.

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Chapter A5-3 Maintenance, Overhaul and Repair Manuals

1 Introduction

- 1.1 Manuals containing information and recommendations necessary for the maintenance, overhaul and repair of aircraft, including engines and auxiliary power units, propellers, components, accessories, instruments, electrical and radio apparatus and their associated systems, and radio station fixed fittings, shall be provided by the manufacturer/Type Design Organisation to comply with the procedures outlined in this Chapter for aircraft to be granted a United Kingdom Certificate of Airworthiness.
- 1.2 All relevant manuals must be available, unless otherwise agreed by the CAA, for issue to a standard of completion acceptable to the CAA at the time of issue of the Certificate of Airworthiness.

2 General

- 2.1 Except as otherwise agreed by the CAA, manuals produced in accordance with this Chapter, shall be certificated and published under the authority of the appropriate Approved Organisation and shall accurately reflect the design and production standard of the item concerned (see paragraph 1.1).
- 2.1.1 The CAA reserves the right to investigate the content of any certified manual and to require the embodiment of any revision or amendment which is considered necessary to satisfy the Requirements.
- 2.2 Manuals, published by an Approved Organisation, must bear a statement that they comply with this Chapter. A copy of each certified manual must be lodged with the CAA.
- 2.3 The certification, and the NOTE associated with the certification shall be worded as follows and must appear on the title page of each manual:

STATEMENT OF INITIAL CERTIFICATION

This manual complies with British Civil Airworthiness Requirements, Section A, Chapter A5-3.

Signed

Date

CAA Approval No:

NOTE: The above certification does not apply to revisions or amendments made after the date of initial certification by other Approved Organisations. Revisions or amendments made by other Approved Organisations must each be separately certified, and recorded on separate record sheets.

- 2.4 Engine, auxiliary power unit and propeller manufacturers of other components shall provide the aircraft Type Design Organisation with certified manuals (see Appendix for details) which relate to those of their products installed in the aircraft. In the case of products approved under the Component Procedure in Chapter A4-8 the certified

manuals shall be provided by the manufacturer, or produced by the aircraft Type Design Organisation in collaboration with the manufacturer.

- 2.5 All manuals shall be adequately illustrated and include such instructions and information considered necessary to meet the requirements of this Chapter. Manuals complying with the applicable recommendations in Chapter A7-4 would fulfil the requirements or other methods would be acceptable with the agreement of the CAA.
- 2.6 Manuals conforming with the Specification for Manufacturers' Technical Data – Air Transport Association of America – Specification No.100, would also be acceptable as a basis for complying with this Chapter, subject to the inclusion of any variations from the Specifications which may be required by the CAA and which are defined to the Applicant.

3 Vital Points

- 3.1 **Vital Point.** Any point on an aircraft at which single mal-assembly could lead to catastrophe, i.e. result in loss of aircraft and/or in fatalities.
- 3.2 Certain parts in an aircraft's structure or system (including controls and control systems) which are vital to the safety of the aircraft, are not only designed to achieve the appropriate high integrity but are also dependent upon specified maintenance actions to safeguard their integrity throughout the life of the aircraft. For such parts normal inspection procedures and techniques may not provide verification with a sufficiently high degree of confidence, and it will be necessary for two independent (duplicate) inspections to be carried out after initial assembly, or re-assembly following disconnection or adjustment, in accordance with Chapter A6-2 paragraph 10.
- 3.3 For aircraft manufactured in accordance with a Type Certificate issued on or after 1st January 1986 the vital points shall be identified and listed in the maintenance documents. The identification and listing of vital points will not be required to be made retrospectively for existing aircraft so that alternative standards will need to exist for some time.
- 3.4 For aircraft the MTWA of which exceeds 5700 kg, which are manufactured in accordance with a Type Certificate issued prior to 1st January 1986 and no such identification and listing of vital points has been provided, an Operator with the necessary Design Approval or otherwise in consultation with a competent design organisation, may identify and list such points and apply to the CAA to have the list incorporated in the aircraft maintenance documents. Provided such a list is accepted by the CAA the Operator need then carry out duplicate inspections following disturbance of the listed points only.
- 3.5 For aircraft the MTWA of which does not exceed 5700 kg, which are manufactured in accordance with a Type Certificate issued prior to 1st January 1986 and no such identification and listing of vital points has been provided, an Operator may, with the agreement of the CAA, adopt an agreement similar to that described in paragraph 3.4 except that the proposals need cover only the control systems, and duplicate inspections need be carried out on the listed points only.
- 3.6 If no arrangement such as described in paragraphs 3.3, 3.4 and 3.5 has been agreed by the CAA, the need for duplicate inspection of all control systems will remain.

4 Mandatory Life Limitations

- 4.1 The certification of aircraft, engines, propellers and auxiliary power units, often depends on safe lives being established for certain parts, failure of which could hazard the aircraft. They have previously been described in a number of ways; e.g. retirement, ultimate, or scrap lives, but are hereafter referred to as Mandatory Life Limitations.
- 4.2 There is no universal international convention for the location of an authoritative source of Mandatory Life Limitations in the aircraft publications. Because it is important for users of the equipment to be able positively to locate the information, a statement will be made in respect of each aircraft on the United Kingdom register in the 'Mandatory Modifications and Inspections Summary', giving a reference for each aircraft, engine, propeller and auxiliary power unit to the publications in accordance with paragraphs 4.3, 4.4 and 4.5 in which this information is promulgated.
- 4.3 For new certifications the Mandatory Life Limitations required under paragraph 4.1 shall be located in accordance with paragraphs 4.3.1 to 4.3.3 as applicable.
- 4.3.1 In the 'Airworthiness Limitations' section of the Maintenance Manual or other agreed document which forms part of the Instructions for Continued Airworthiness where such a document is required by the regulations under which certification is awarded.
- 4.3.2 Where an approved 'Airworthiness Limitations' section (or equivalent) does not exist, in agreed document(s)¹ which will be identified in accordance with paragraph 4.2.
- 4.3.3 For any component for which a Mandatory Life Limitation has been established (engines, propellers, helicopter rotor head, airframe structure etc.) the definition of a 'typical cycle' or 'typical flight' (engine/propeller parameters, aircraft weight, forward speed, altitude, duration, etc.), in terms of the relevant parameters on which this life determination has been based, shall be stated in the document required under paragraph 4.3.1 or 4.3.2. The definition of a typical cycle of flight should be based on the best information (e.g. from development and certification flight testing) at the time of certification, and updated, as necessary, following service experience.
- 4.4 Where these Mandatory Life Limitations have been established in units other than flying hours or landings (e.g cycles) and published in accordance with paragraphs 4.1, 4.2 and 4.3, the procedure for converting flying hours or landings, as applicable, into these units shall be given in the same documents.
- 4.5 Whatever the source, each Mandatory Life Limitation must be approved by the CAA or by the responsible Authority of the country of origin. No alteration or deletion shall be made to any of the published CAA Mandatory Life Limitations without prior approval of the CAA.
- 4.6 Where any alterations in the published Mandatory Life Limitations are required by the CAA, these shall be promulgated as follows:
- 4.6.1 **Normal Amendments to Mandatory Lives**
- In the case of aircraft or products having an approved 'Airworthiness Limitations' document, by incorporation of a CAA approved amendment to that document;
 - In the case of products which do not have an approved 'Airworthiness Limitations' section or equivalent document, by means of Service Bulletins which will be made mandatory by the CAA.

1. In the case of engines, propellers and auxiliary power units it is recommended that these limitations are stated in the Overhaul Manual. Additionally, the definition of a 'typical cycle' shall be stated in the Maintenance Manual (see Chapter A7-4, paragraphs 4.1.10, 5.1.8) and a cross reference included in the Overhaul Manual (see Chapter A7-4, paragraphs 4.2.9 and 5-2).

- 4.6.2 **Reductions in Mandatory Lives.** Immediate attention must be drawn to any reduction in a Mandatory Life Limitation. In order to achieve this, promulgation shall, in the first instance be by means of an Airworthiness Directive or Mandatory Service Bulletin.

5 Review and Amendment of Manuals

- 5.1 Certified manuals shall be reviewed by the originator at periods not exceeding six months and where changes have been made affecting maintenance, overhaul and repair, permanent revisions or amendments shall be published.

- 5.1.1 The certification of permanent revisions or amendments shall be as follows:

This permanent revision/amendment complies with British Civil Airworthiness Requirements, Section A, Chapter A5-3.

Signed

Date

CAA Approval No:

A copy of each revision or amendment shall be forwarded to the CAA.

- 5.2 Essential information which has to be issued in the shortest possible time may be published by a serialised system of temporary revisions or amendments which shall subsequently be embodied in the permanent revision or amendment procedure.

- 5.2.1 The Certification of temporary revisions or amendments shall be as follows:

This temporary revision/amendment complies with British Civil Airworthiness Requirements, Section A, Chapter A5-3.

Signed

Date

CAA Approval No:

- 5.3 Permanent revisions or amendments or temporary revisions or amendments shall be distributed by the Type Design Organisation or manufacturer to registered holders of the manuals, together with the necessary instructions for embodiment and recording in the manuals. Each manual shall contain a statement which will indicate that the changing of data by uncertified revisions or amendments or temporary revisions or amendments invalidates the initial certification of the manual relative to the part revised. The statement shall appear on the revision or amendment sheet in the following form:

The introduction of data by revisions or amendments or temporary revisions or amendments not certified in accordance with British Civil Airworthiness Requirements, Chapter A5-3 will invalidate the initial certification on the title page of the manual relative to the part revised. Revisions or amendments, or temporary revisions or amendments embodied in this manual and certified by an appropriate Approved Organisation, other than that applicable to the initial certification, must be recorded on separate record sheets.

- 5.4 Operators with appropriate approval may amend manuals without reference to the Type Design Organisation, provided that the technical substance of the change is within the terms of their approval. In this case the Operator shall proceed as follows:
- Prepare a temporary or permanent revision or amendment in compliance with this Chapter;
 - Provide the CAA with a copy;
 - Incorporate the revision or amendment in the manuals and record the embodiment in a revision or amendment record, which is separate from that provided by the Type Design Organisation.

NOTE: Where Operators wish to amend manuals, co-operation with the Type Design Organisation is recommended. This also applies where amendments to manuals are necessary due to the incorporation of Minor Modifications under the CAA Form AD 261 procedure (see Chapter A2–5).

- 5.5 The registered holder will be responsible for making the necessary arrangements with Type Design Organisations or manufacturers to ensure receipt of revisions or amendments to manuals and any Service Bulletins, or similar documents that may be issued from time to time.

6 Maintenance Programmes

- 6.1 The Type Design Organisation (see Chapter A6–2 Appendix 1), shall be responsible for:

- The compilation of a list of the Maintenance Significant Items from an evaluation of the functions, failure modes and failure effects of the engine/APU and related systems;
- Taking account of a), the establishment of a list of maintenance actions together with recommended frequencies and sampling points;
- The establishment of a programme for monitoring engine critical parts (see Section C, Chapter C3–2, sub-paragraphs 1.2.5 a) and b)) at prescribed intervals;
- The evaluation of the effect of the Operator's flight profile on engine/APU rotating parts or the provision of information on which such evaluation can be based;
- The preparation of a submission for the aircraft Type Design Organisation's Minimum Equipment List (MEL) and co-operation in subsequent changes (see Chapter A7–6).

- 6.2 When establishing the list of maintenance actions with recommended frequencies which should be carried out on the engine and APU, the total evidence available should be assessed, account being taken of:

- the evaluation required by sub-paragraph 6.1 a);
- any similarity of the design to existing types;
- the experience already gained, either as a result of flight testing or from route proving under conditions reasonably similar to those which will exist in service, or from previous service experience;
- the experience gained during simulated flight plan testing (e.g. durability bench tests);
- the experience gained on components during engine and rig testing;
- the extent of the provisions made for Engine Health Monitoring; and
- the submitted Minimum Equipment List.

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Chapter A5-4 Weight and Balance of Aircraft

1 Introduction

This Chapter A5-4 prescribes the requirements for the weighing of aircraft, the determination of the corresponding centre-of-gravity position and the provision of information from which the loading for flight can be correctly determined.

NOTE: The Operator's responsibilities are prescribed in the Air Navigation Order and the Air Navigation (General) Regulations.

2 Definitions

2.1 **Basic Weight.** Basic Weight is the weight of the aircraft and all its basic equipment, plus that of the declared quantity of unusable fuel and unusable oil. In the case of turbine-engined aircraft the Maximum Total Weight Authorised of which does not exceed 5700 kg, it may also include the weight of usable oil.

2.2 **Basic Equipment.** Basic Equipment is the unconsumable fluids, and the equipment which is common to all roles for which the Operator intends to use the aircraft.

2.3 **Variable Load.** Variable Load is the weight of the crew, of items such as the crew's baggage, removable units, and other equipment, the carriage of which depends upon the role for which the Operator intends to use the aircraft for the particular flight.

2.4 **Disposable Load.** Disposable Load is the weight of all persons and items of load, including fuel and other consumable fluids, carried in the aircraft, other than the Basic Equipment and Variable Load.

NOTE: To obtain the total loaded weight it is necessary to add to the Basic Weight the weights of those Variable and Disposable Load items which are to be carried for the particular role for which the aircraft is to be used.

3 General

3.1 Aircraft shall be weighed when all manufacturing processes have been completed, and in accordance with the procedures in this paragraph 3.

NOTE: The CAA will consider applications from aircraft manufacturers and Operators to weigh certain types of aircraft on a sampling basis (i.e. representative aircraft, as weighed, would be acceptable for others of the same standard).

3.1.1 Aircraft the Maximum Total Weight Authorised of which exceeds 5700 kg, shall be reweighed within two years after the date of manufacture, and subsequent check weighing shall be made at intervals not exceeding five years, and at such times as the CAA may require.

3.1.2 Aircraft the Maximum Total Weight Authorised of which does not exceed 5700 kg, shall be re-weighed at such times as the CAA may require.

3.2 When an aircraft is weighed, the condition of the aircraft (i.e. the equipment and other items of load such as fluids in tanks) shall be recorded. The equipment installed should not differ from that included in the declared list of Basic Equipment associated with the Weight and Centre-of-Gravity Schedule or the Loading and Distribution Schedule as appropriate.

- 3.3 The Basic Weight and the corresponding c.g. position shall be determined and entered in the Weight and Centre-of-Gravity Schedule or in the Loading and Distribution Schedule as appropriate.
- 3.4 The CAA may require that the actual weight of the items of Variable Load be ascertained.
- 3.5 A Weighing Record containing records of the weighing and the calculations involved shall be made available to the CAA, and such records shall be retained by the Operator. When the aircraft is again weighed the previous Weighing Record shall be retained with the aircraft records.

4 Weight and Balance Report - Aircraft Exceeding 5700 kg

- 4.1 A Weight and Balance Report shall be produced for each Prototype, Variant and Series aircraft the Maximum Total Weight Authorised of which exceeds 5700 kg.

5 Weight and Centre-of-Gravity Schedule - Aircraft Exceeding 2730 kg (see A7-10 Appendix No.1)

A Weight and Centre-of-Gravity Schedule shall be provided for each aircraft the Maximum Total Weight Authorised of which exceeds 2730 kg, except that for an aircraft the Maximum Total Weight Authorised of which exceeds 5700 kg, the information contained in Parts B and C of the Schedule may, for a new aircraft, be given as part of the Weight and Balance Report.

6 Weight and Centre-of-Gravity Schedule - Aircraft Not Exceeding 2730 kg (see A7-10 Appendix No.2)

For aircraft the Maximum Total Weight Authorised of which does not exceed 2730 kg, either a Weight and Centre-of-Gravity Schedule which complies with 5 and shall contain instructions for the determination of the loaded weight, the total load moments and resultant c.g. positions, or a Loading and Distribution Schedule which complies with Paragraph 3, Chapter A7-10 shall be provided.

Chapter A5-6 Identification and Classification Procedure for CAA Airworthiness Directives, Mandatory Modifications, Inspections and Changes to Approved Documentation

1 Introduction

- 1.1 This Chapter A5-6 contains procedural requirements for classification, notification and identification of CAA Airworthiness Directives, mandatory modifications, inspections, and changes to approved documentation. Mandatory inspections, for the purpose of this Chapter are those inspections classified as mandatory by the CAA, where the inspection itself is the work.
- 1.2 The provisions of Article 81(5) of the Air Navigation Order 2000 are such that the CAA may, on sufficient grounds being shown, vary a Flight Manual, Performance Schedule, or other document incorporated by reference in a Certificate of Airworthiness. Furthermore, under the provisions of Article 8 of the Air Navigation Order 2000, an aircraft shall not fly unless any conditions subject to which the Certificate of Airworthiness was issued or rendered valid are complied with.
- 1.3 The provisions of Article 9(7) of the Air Navigation Order 2000 as amended, are such that a Certificate of Airworthiness in respect of an aircraft registered in the United Kingdom will cease to be in force until any modification or inspection, being a modification or inspection required by the CAA, is completed.

2 Mandatory Actions

- 2.1 In accordance with the provision of Article 9(7) of the Air Navigation Order 2000, the following modifications, inspections and changes to approved documentation are classified as mandatory:
- a) Those notified in a CAA Airworthiness Directive. Wherever possible, CAA Airworthiness Directives adopt advice promulgated by the Type Design Organisation (or in some cases, the holder of a Type Responsibility Agreement (see Chapter A5-1 paragraph 4)) through documents such as Service Bulletins and Flight Manual amendments;
 - b) Those notified in a CAA Emergency Airworthiness Directive;
 - c) Those necessary to comply with CAA Airworthiness Notices of a mandatory character. Airworthiness Notices are not affected by the procedures in this Chapter.

- NOTES:**
- 1 The term 'Mandatory' should not be used in the product manufacturers documents to require compliance. The term 'Mandatory' should only appear in documents promulgated by a Regulatory Authority.
 - 2 Such documents which pre date this requirement will use the word 'Mandatory' and need not be amended.

- 2.2 Modifications, inspections, and changes to approved documentation considered essential for airworthiness will be classified as Mandatory by the CAA. An Airworthiness Directive will be promulgated mandating compliance with the particular

service information. This will be undertaken in consultation with the Approved Organisation concerned and appropriate Operators where necessary. The criterion for embodiment or compliance, e.g. a date, a number of hours or cycles, or operational procedures, will be decided at the same time.

- 2.3 In deciding a criterion for embodiment or compliance, the following is taken into account:
- a) The degree of urgency;
 - b) The availability of modified parts and factors affecting their delivery, e.g. the number of products concerned and their geographical location;
 - c) The amount of work required to complete the modification/inspection;
 - d) The impact on flight operations.
- 2.4 Wherever possible, the criterion for embodiment or compliance is fixed to coincide with periodical inspections or overhauls so that the Operator has a reasonable amount of time for carrying out the work. In addition, consideration is given to the possibility of a special inspection procedure as, at least, a temporary alternative to the embodiment of a modification. Operators and their contracted maintenance organisations are expected, when necessary, to make priority arrangements to achieve compliance within the period specified.
- NOTE:** Airworthiness Directives together with a summary of associated Manufacturers Service Bulletins or equivalent documents are promulgated in the CAA publication, 'Mandatory Aircraft Modifications and Inspection Summary' (CAP 476).
- 2.5 Information relating to a modification, inspection or change to approved documentation which becomes the subject of an Airworthiness Directive will normally be distributed by the manufacturer as a Service Bulletin, Technical News Sheet or Flight Manual Amendment etc.
- 2.6 In addition to the notification by the manufacturer (see paragraph 2.5), the CAA will publish an associated Airworthiness Directive and at the same time advise the Responsible Authority of all ICAO Contracting States. The method of notification (e.g. telex, cable or airmail) will depend upon the urgency of the information. A further notification is made to those Responsible Authorities by the transmission of amendments to the publication 'Mandatory Modifications and Inspection Summary' which they receive in accordance with Airworthiness Notice No 22.

3 Airworthiness Directive Development Procedure for UK Products and Equipment

- a) Where the CAA, in consultation with the Type Design Organisation or Type Responsibility Agreement holder, decides that a modification, inspection or change to approved documentation is essential for airworthiness, it will initiate mandatory status by raising a provisional Airworthiness Directive and an associated reference number that will be notified to the Type Design Organisation.
- b) The CAA shall be satisfied that the Type Design Organisation, in the development of the modification/inspection, has consulted representative Operators of the aircraft type to which the provisional Airworthiness Directive applies.
- c) Where material essential for airworthiness involves engine(s), propeller(s), or equipment, the CAA shall be satisfied that the Type Design Organisation or Approval Holder as appropriate, has involved the Type Design Organisation of the aircraft to which the equipment may be installed.

- d) When satisfied that the development of the material essential for airworthiness is complete, the CAA will cancel the provisional Airworthiness Directive reference number and provide the Type Design Organisation with an Airworthiness Directive Number.
- e) At the same time as the CAA allocates an Airworthiness Directive Number, the Type Design Organisation will be provided with a draft of the Airworthiness Directive to be promulgated by the CAA.
- f) Where possible the CAA and the Type Design Organisation will endeavour respectively to promulgate the Airworthiness Directive, and the Service Bulletin, Flight Manual amendment or equivalent document on a mutually agreed date.

NOTE: The CAA has a duty to promulgate an Airworthiness Directive without the agreement of the Type Design Organisation if it believes this is essential for airworthiness.

4 Documentation

4.1 The wording of documents (e.g. Service Bulletins, Flight Manual amendments or equivalent documents) used to notify modifications, inspections, or changes to approved documentation destined to become the subject of an Airworthiness Directive, shall be agreed by the CAA, and the documents shall be certified, published, and distributed, by the appropriate approved Organisation. The documents shall comply with the format of ATA Spec. 100 where appropriate.

4.2 Service information which has become the subject of an Airworthiness Directive shall not be amended without the prior approval of the CAA.

NOTE: The Airworthiness Directive shall refer to the specific issue no. of the Service Bulletin or equivalent document.

4.3 Service information designating changes which are the subject of an Airworthiness Directive shall be distributed to:

- a) all owners or Operators of the particular type(s) of aircraft concerned;
- b) those Airworthiness Authorities to whom these owners or Operators are responsible;
- c) where the modification, inspection, or change to approved documentation derives from other than the aircraft Type Design Organisation (e.g. an engine Type Design Organisation or equipment Approval holder); to any aircraft Type Design Organisation whose aircraft are fitted with the item concerned and to the responsible Airworthiness Authority.

NOTES: 1 Owners, Operators, and organisations undertaking overhaul/maintenance on aircraft should ensure that the Type Design Organisation of each type of aircraft is informed of their names and addresses to facilitate distribution of the documents notifying mandatory modifications, inspections or changes to approved documentation.

2 Information distributed in accordance with paragraph 4.3, is summarised in the CAA Publication entitled 'Mandatory Aircraft Modifications and Inspections Summary' which will be supplied to foreign Airworthiness Authorities on application to the Civil Aviation Authority (see CAA Airworthiness Notice No. 22).

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Chapter A5-7 Master Minimum Equipment Lists

1 Introduction

- 1.1 Article 16 of the UK Air Navigation Order 2000, as amended, requires the permission of the CAA to be obtained before an aircraft may be despatched with an unserviceability.
- 1.2 Information and instructions intended to enable the determination of the measure of unserviceable equipment and systems which may exist at the commencement of a flight while still allowing the safe operation of the affected aircraft shall be provided in the form of a Master Minimum Equipment List (MMEL) for the type, for approval by the CAA. Operators of aircraft of the appropriate type will use the information and instructions provided in the MMEL to produce their own Minimum Equipment List (MEL) or an equivalent document (see CAP 549).
- 1.3 For information regarding the format of MMELs – see Chapter A7–6.

2 Applicability and Scope

- 2.1 This requirement is applicable to any aircraft of United Kingdom design and construction for which a Certificate of Airworthiness (C of A) is in force or for which an application for issue of a C of A has been made, and which has an authorised MTWA exceeding 2730 kg, with the exception of those certificated in the Special Category, unless otherwise determined by the CAA.
- 2.2 **Scope of Master Minimum Equipment Lists.** The intent of an MMEL is that it should be relevant to the build standard of aircraft of that particular type and, with any necessary revisions, to any variants of that type.

NOTE: The MMEL is not intended to be used as an Operator's MEL.

3 Application for Approval of a Master Minimum Equipment List

- 3.1 Application may be made to the UK CAA for the approval of an MMEL. The Applicant shall normally be the actual or the responsible Type Design Organisation.
- 3.2 For types or variants for which application is made to the CAA for either the issue of a new UK Type Certificate or the extension of an existing Type Certificate, the provision of the approved MMEL may be considered to be an integral part of the Type Certification process. In such cases a separate application for approval of the MMEL will not be necessary.
- 3.3 An application for the approval of an MMEL which is submitted separately from an application for Type Certification (or the extension of an existing Type Certificate) will be considered to constitute a modification (see 4 b)).

4 Charges

CAA charges for the investigation and approval of an MMEL will be levied as follows:

- a) For a type which is the subject of a Type Certification programme such charges will be included in the Type Certification charges;

- b) For a type for which application is made separately from that for Type Certification such charges will be in accordance with the CAA Scheme of Charges appropriate to modifications current at the time of application.

5 CAA Investigation

The CAA reserves the right to investigate, in consultation as necessary with the Type Design Organisation, the contents of the proposed MMEL and to require the embodiment of any revision or amendment it considers necessary to satisfy the requirements. When a standard acceptable to the CAA has been achieved the Type Design Organisation will be so informed such that arrangements can be made for the issue of an MMEL document conforming to the approved standard. (See 7.1.)

6 CAA Approval of Initial Master Minimum Equipment List for a Type

- 6.1 When the CAA has informed the Type Design Organisation that the proposed initial MMEL for the type has been approved, the document shall carry a statement indicating that approval and shall be worded as follows:

Approved by the UK CIVIL AVIATION AUTHORITY

Signed:

For and on behalf of the CIVIL AVIATION AUTHORITY

Date:

Following signature on behalf of the CAA, this statement shall appear on the title page of each Master Minimum Equipment List (MMEL).

- 6.2 If an MMEL is published in part before completion, or before the appropriate aircraft type is certificated, it must be marked 'Draft' on the page and in the position normally occupied by the Approval statement.

7 Issue of Approved Master Minimum Equipment Lists

- 7.1 In the case of new aircraft types of UK manufacture, the Type Design Organisation shall be responsible for the preparation, publication and distribution of the MMEL conforming to the approved standard.
- 7.2 In the case of existing aircraft types for which no MMEL has previously been approved by the CAA, the CAA assumes the responsibility for the compilation and publication of the UK MMEL unless determined otherwise.

NOTE: In compiling the MMEL the CAA will take account of any existing MMEL, whether or not it has previously been approved by any other Airworthiness Authority.

8 Content and Format of Master Minimum Equipment Lists

- 8.1 The instructions and information given in the MMEL must be presented in a manner which will enable the Operator to prepare his MEL giving sufficient detail for a proper understanding of each subject such that a decision on the extent of permissible unserviceabilities of equipment and systems at the commencement of a flight or

series of flights can be reached by the Operator. See Master Minimum Equipment Lists (MMEL) and Minimum Equipment Lists (MEL) – Procedures (CAP 549).

NOTE: In any cases where the data contained in a MMEL conflicts with data contained in the approved Flight Manual for an aircraft of the type, the limitations and information given in the Flight Manual shall be overriding.

- 8.2 The MMEL should utilise an agreed referencing system such as ATA 100 and be presented in a format acceptable to the CAA. It shall contain a List of Effective Pages, a Preamble which explains the scope, purpose and validity of the document, and an explanation of any coding or terminology used (see BCAR Chapter A7–6).

9 Amendment of Master Minimum Equipment Lists

- 9.1 Proposed revisions or amendments (regardless of their originator) which are introduced after the date of approval of a MMEL by the CAA, shall be separately approved.

- 9.2 Applications for the approval of amendments to a Master Minimum Equipment List may be submitted by:

- a) the Type Design Organisation approved for the design of the appropriate aircraft type;
- b) an Operator of aircraft of the type (or his agent) supported by the Type Design Organisation where relevant; or
- c) the CAA.

Each such application shall be accompanied by a statement giving technical justification for the proposed amendment and any new or amended procedures (whether Maintenance (M) or Operational (O)). Any such amendments will be evaluated by the CAA in consultation with the Type Design Organisation.

- 9.3 When approved by the UK CAA, a revision to an MMEL compiled by the UK Type Design Organisation shall be despatched to all registered holders of that MMEL together with instructions for the embodiment into the appropriate MMEL. The revision status and date of the affected page(s) shall be given in a revised List of Effective Pages.

- 9.4 In the case of aircraft of types for which the CAA has assumed the responsibility for compilation of the MMEL, amendments will be compiled by the CAA and shall be made available to all holders of that MMEL together with instructions for embodiment into the appropriate MMEL. The revision status and date of the affected page(s) shall be given in a revised List of Effective Pages.

- 9.5 When appropriate, Temporary Revisions (TRs) may be prepared and inserted into a MMEL in cases where urgent change in the information and/or instructions presented is required. Such TRs must have been discussed with, and approved by the UK CAA and must be recorded in a separate list of Effective Temporary Revisions which will identify the date of the TR, the permanent page affected, the means, if any, by which it is superseded and any relevant remarks. This list of TRs will be revised and updated when permanent revisions are approved and published.

- 9.6 TRs shall be made available to all registered holders of the appropriate MMEL, together with instructions for the embodiment and recording in the MMEL.

10 Modification of Aircraft

Applicants for approval of modifications to aircraft (Chapter A2–5) shall, at the time application is made, consider the effects of the proposed modification upon the information and instructions contained in the MMEL for the type and shall submit to the UK CAA of any revisions likely to be required as a consequence of the incorporation of the modification. Such revisions should either be processed as a revision to the MMEL (where the Type Design Organisation is the Applicant for the modification or supports the proposed modification), or by a separate UK CAA Approved Supplement to the MMEL.

11 Reference Documents

Details of the scope, extent, legislative background, procedures and responsibilities relating to MMELs and MELs are prescribed in CAP 549. It is recommended that this document be studied before a Master Minimum Equipment List is compiled. Reference to Air Operators' Certificates (CAP 360) Part One – Operation of Aircraft and Part Two – Arrangements for Engineering Support, and Specification for Operations Manuals (CAP 450) is also recommended.

Chapter A5-8 Mandatory Action on Aircraft Operating in Accordance with a Permit to Fly

1 Introduction

- 1.1 This Chapter A5–8 prescribes the requirements and procedure for reporting, promulgating and implementing action declared as mandatory by the CAA in respect of aircraft registered in the United Kingdom and operating in accordance with a Permit to Fly.
- 1.2 Where service experience reveals a design or manufacturing problem on an aircraft operating in accordance with a Permit to Fly and the CAA considers that corrective action is required to restore acceptable levels of safety, a Mandatory Permit Directive (MPD) will be issued by the CAA.
- 1.3 The Permit to Fly for an aircraft registered in the United Kingdom will cease to be in force if any required action, compliance end date or flying time limitations specified by the MPD have not been complied with.

2 Work and Certifications

- 2.1 Work undertaken in incorporating a Mandatory Permit Directive shall be supervised by an Organisation Approved by the CAA for the purpose (see Sub-section A8) or by a person appropriately authorised by the CAA.
- 2.2 Full particulars of the work undertaken to incorporate the modification, or details, results and work arising from the mandatory inspection, shall be entered in the appropriate log book, quoting the reference number of the appropriate document, e.g. Airworthiness Approval Note for a Major Modification, Service Bulletin for a mandatory inspection.
- 2.3 All relevant records of modifications and mandatory inspection shall be made available to the CAA for examination on request, and these shall not be destroyed without authorisation from the CAA.

NOTE: The Air Navigation Order requires that log books, and other documents which are identified and referred to in the log books (therefore forming part of the log books) shall be preserved until a date two years after the aircraft, the engine or the variable pitch propeller, as the case may be, has been destroyed, or permanently withdrawn from use.
- 2.4 Where an owner or Operator wishes to develop an alternative means of compliance, the written agreement of the CAA will be required. The aircraft technical records and where applicable the Organisation's modification system shall reflect the change from the MPD.

3 Promulgation

- 3.1 A collated volume of MPDs will be available from the CAA's printers whose details are provided on the inside cover of this publication. Individual MPDs of an emergency nature will be distributed to all registered owners of the type of aircraft concerned.

4 Reporting

- 4.1 The CAA should be notified of any unsafe condition that has occurred, whether or not this was identified from an incident or an occurrence. The following organisations, will need to notify the CAA of incidents of airworthiness significance:
- a) A CAA Approved Design Organisation or manufacturer of an aircraft type (including microlights);
 - b) Any maintenance Organisation or nominated person(s) engaged in the maintenance of such aircraft (e.g. PFA, BMAA, etc. or A8-15(M3), A8-20(M5), JAR-145 Approved Organisations);
 - c) In the case of ex-military aircraft, Organisations holding A8-20(E4) Approval for a type where, through their liaison with the responsible Design Organisation (where such an Organisation still provides design support) they have knowledge of newly promulgated mandatory action (e.g. Special Flying Instructions, Special Technical Instructions).
- 4.2 The purveyor or manufacturer of an aircraft kit should notify the CAA of any unsafe condition of which he has knowledge.
- 4.3 The owner, pilot or Operator of an aircraft operating on a Permit to Fly should notify the appropriate Organisation in 4.1 or 4.2 above of an unsafe condition but may also voluntarily notify the CAA directly via the CAA Occurrence Reporting Scheme or other appropriate means.
- 4.4 All incidents should be reported to the CAA as soon as possible, preferably within 96 hours to:
- Civil Aviation Authority
Safety Regulation Group
CAA Occurrence Reporting Scheme
Safety Investigation & Data Department
2W Aviation House
Gatwick Airport South
West Sussex RH6 0YR

Sub-section A6
Continued Airworthiness –
Responsibilities of the Operator

Chapter A6-2 Maintenance of Aircraft

1 Introduction

- 1.1 In accordance with the Air Navigation Order, an aircraft registered in the United Kingdom in respect of which a Certificate of Airworthiness in the Transport Category (Passenger), Transport Category (Cargo) or Aerial Work Category is in force, shall not fly unless it has been maintained in accordance with a Maintenance Schedule approved by the CAA and Certificates of Maintenance Review issued certifying that a maintenance review has been carried out. Approved Maintenance Schedules are also required by this Chapter for all aircraft in the Private Category and where directed in a particular case for any other aircraft in the Special Category.

NOTE: The term **Maintenance Programme**, is intended to embrace both scheduled maintenance tasks and the associated procedures (including reliability monitoring). The term **Maintenance Schedule** is intended to embrace a document which includes the maintenance tasks alone (including any associated Approval documents), it would not normally include maintenance procedures. JAR-OPS uses the term **Maintenance Programme** though the document referred to may only contain scheduling information (including associated Approval documents) and not include the associated procedures, other than by reference.

Throughout this Chapter and Appendix the term Programme is intended to include both the scheduled tasks and the associated procedures.

- 1.2 Manufacturer's Maintenance Programmes (see A5-3, JAR 25.1529, JAR 23.1529) are not Approved by the CAA in accordance with the procedures set out in A7-5, which refers to this BCAR. This Chapter A6-2 may be used by the Manufacturer however, for guidance on the required content of an Operator's Maintenance Schedule.

2 General

- 2.1 An aircraft registered in the United Kingdom shall be maintained in accordance with a Maintenance Schedule or Maintenance Programme Approved by the CAA in the following circumstances:

- a) For aircraft in respect of which a Certificate of Airworthiness in the Transport Category (Passenger), Transport Category (Cargo), Aerial Work Category or Private Category is in force.
- b) For aircraft in respect of which a Certificate of Airworthiness in the Special Category is in force, when so prescribed on the particular Certificate of Airworthiness.

NOTE: For aircraft the Maximum Total Weight Authorised of which does not exceed 2730 kg maintained in accordance with the Light Aircraft Maintenance Scheme, maintenance shall be in accordance with Schedule CAA/LAMS/A/1999 for fixed wing and Schedule CAA/LAMS/H/1999 for rotary wing aircraft unless the Operator makes a specific application for approval of an alternative Maintenance Schedule or Maintenance Programme (see paragraph 3 or 4 as appropriate).

- 2.2 A reliability programme is required when specified by the Manufacturer's Maintenance Planning Document or a Maintenance Review Board Report. Operators may, however, develop their own reliability monitoring programme when it may be deemed beneficial from a maintenance planning point of view.

3 Maintenance Schedule - Non-JAR OPS

3.1 **General.** Schedules and Programmes submitted for Approval shall comply with this paragraph 3 as appropriate. The procedures which are required to be followed to obtain CAA Approval of Maintenance Schedules are set out in A7–5.

NOTE: A6–2 Appendix No. 1 contains supplementary information for Condition Monitored and Reliability Centred Maintenance Programmes including those associated with engines and auxiliary power-units, installed in aircraft certificated in the Public Transport, Aerial Work or Private Categories.

3.2 **Maintenance Schedule.** The Schedule which is submitted to the CAA for Approval shall contain the basic information prescribed in a), b), c), d) and e).

a) **General**

- i) Reference number, issue number and date;
- ii) Registered name(s) and address(es) of the Owner(s)/Operator(s);
- iii) Type and model(s) of aircraft, engines, auxiliary power-units, and, where applicable, propellers;
- iv) Areas of operation of the aircraft;
- v) Class of work in relation to the areas of operation;
- vi) Registration Marks of aircraft maintained in accordance with the schedule;
- vii) Details of any arrangements involving the co-operation of more than one Operator, or which involve the combination of information from other aircraft fleets for the purpose of providing additional statistical and sampling material: see also Appendix 1, 2.6.

NOTE: The CAA will consider accepting a group of Operators, who are operating similar aircraft, combining for the purpose of sampling, provided that:

- they can demonstrate similarity of operations, procedures, modification standards and maintenance requirements;
- they are subject to similar overhaul procedures, and
- the sampling is not confined to any particular Operator.

b) **Primary Maintenance Processes.** In respect of each part of the aircraft, its engines and auxiliary power-units, propellers, components, accessories, equipment, instruments, electrical and radio apparatus, and all associated systems and installations (hereinafter referred to as 'an Item'), a list of the primary maintenance processes in terms of i) to vi):

- i) Cross reference, where applicable, to the source of the task (e.g. Maintenance Review Board Report (MRB) and Maintenance Planning Document (MPD));
- ii) Periods at which the item shall be inspected, together with the type and degree of inspection;
- iii) Periods at which the item shall, as appropriate, be checked, cleaned, lubricated, adjusted and tested;
- iv) Periods at which the item shall be overhauled or replaced by a new or overhauled item, expressed in terms of:
 - a criterion related to usage, e.g. a period of time, number of cycles, number of landings;

– a criterion related to conditions, e.g. limits of wear, limiting dimensions.

NOTE: Where actual criteria are not included in the Schedule, they should be defined by cross reference to acceptable documents e.g. Approved Maintenance Manual or Maintenance Planning Document.

- v) The Mandatory Life Limitations to which certain parts of aircraft, engines, propellers, auxiliary power units and systems, the failure of which could have a hazardous effect on the aircraft, are subject. For foreign products these limitations, unless otherwise agreed by CAA, shall be identical to those specified in the Mandatory Life Limitations section of the Manufacturer's Recommended Maintenance Programme (see A5-3). The limitations may be itemised in the schedule, or included by reference to the appropriate airworthiness data;
- vi) Such other processes as are agreed by the CAA, e.g. condition monitoring (see Appendix).
- c) **Record of Amendments.** Provision for a record of the amendments incorporated in the Schedule.
- d) Reference to the source of the content of the schedule e.g. MRB, MPD, Maintenance Manual.
- e) **Check cycle criteria.** The criteria for 'packaging' checks shall be described (e.g. A Check – 400FH, B Check – 800 FH etc.).

4 Maintenance Programme - JAR-OPS

For aircraft operated for the purpose of Commercial Air Transport in accordance with JAR-OPS, the Operator shall submit for approval a Maintenance Programme which complies with JAR-OPS Subpart M and other UK National Requirements (e.g. CAP 455 Airworthiness Notices and JAA Information Leaflets). The procedures which are required to be followed to obtain CAA Approval of Maintenance Schedules or JAR-OPS Maintenance Programmes are set out in A7-5.

NOTE: A6-2 Appendix No. 1 contains supplementary information for Condition Monitored and Reliability Centred Maintenance Programmes including those associated with engines and auxiliary power units in aircraft operated for the purposes of Commercial Air Transport in accordance with JAR-OPS.

5 Certificate of Maintenance Review

- 5.1 An aircraft registered in the United Kingdom in respect of which a Certificate of Airworthiness in the Transport Category (Passenger), Transport Category (Cargo) or Aerial Work Category is in force, shall be subject to a maintenance review at intervals specified in the Approved Maintenance Schedule or the relevant Approval Document of the Maintenance Schedule, as appropriate. At the completion of a review, a Certificate of Maintenance Review shall be issued.

NOTE: An aircraft operated for the purpose of Commercial Air Transport, in accordance with JAR-OPS shall be maintained in accordance with JAR-OPS Subpart M which does not require the issuance of a Certificate of Maintenance Review. Such Operator's aircraft shall be granted Exemption from the requirements of the Air Navigation Order, Article 10(1)(b) in respect of the Certificate of Maintenance Review detailed in paragraphs 5, 6 and 7 of this Chapter.

- 5.2 The Signatory shall only issue a Certificate of Maintenance Review when satisfied, at the time of the review, that the following aspects of maintenance have been carried out:
- a) All maintenance specified in the Approved Maintenance Schedule has been carried out within the prescribed time period and any extension to limiting periods is in accordance with CAA Approved procedures.
 - b) All modifications and inspections deemed mandatory by the CAA have been carried out within the prescribed time periods and any extension to limiting periods has been authorised by the CAA. Due account must be taken of any repetitive inspections.
 - c) All defects entered in the Technical Log have been rectified or deferred in accordance with CAA Approved procedures.
 - d) All Certificates of Release to Service required have been issued in accordance with the procedures of Chapter A6-7, paragraph 3 or JAR-145 as necessary.

- NOTES:**
- 1 The time intervals for the Certificate of Maintenance Review will be specified on a calendar 'not exceed' basis only and therefore, it is not necessarily intended to align with any check.
 - 2 For aircraft maintained in accordance with the Light Aircraft Maintenance Scheme the maintenance review will coincide with the annual check.
 - 3 The Certificate of Maintenance Review requires only one signature.

6 Certificate of Maintenance Review Format

- 6.1 The Certificate of Maintenance Review shall be in the following format:

CERTIFICATE OF MAINTENANCE REVIEW

Aircraft Type

Nationality and Registration Mark.....

Certified that a maintenance review of this aircraft and such of its equipment as is necessary for its airworthiness has been carried out in accordance with the requirements of the Air Navigation Order for the time being in force.

The next maintenance review is due

Signed

CAA Approval/Licence

Date

Organisation

7 Certification of Maintenance Review Signatories

- 7.1 A Certificate of Maintenance Review shall be issued only by:
- a) the holder of an aircraft maintenance engineer's licence granted under the Air Navigation Order being a licence which entitles the holder to issue that certificate; or

- b) the holder of an aircraft maintenance engineer's licence granted under the law of a country other than the United Kingdom and rendered valid under the Air Navigation Order in accordance with the privileges endorsed on the licence; or
- c) the holder of an aircraft maintenance engineer's licence granted under the law of any such country as may be prescribed in accordance with the privileges endorsed on the licence and subject to any conditions which may be prescribed; or
- d) a person whom the CAA has authorised to issue a Certificate of Maintenance Review in a particular case and in accordance with that authority; or
- e) a person authorised by an Organisation Approved by the CAA as being competent to issue such a certificate and in accordance with that Authorisation and Approval.

NOTE: Notwithstanding the foregoing in approving a Maintenance Schedule, the CAA will specify who may issue a Certificate of Maintenance Review. For an Organisation Approved in accordance with JAR-145, Airworthiness Notice 14 sets out the CAA requirement for the Authorisation of Personnel. For all other cases the signatory will be an engineer possessing a Type Rated Licence valid in at least two categories (other than Category X Compasses), each category being appropriate to the particular aircraft type.

8 Certificate of Release to Service - Non Commercial Air Transport

NOTE: Certificate of Release to Service for Commercial Air Transport shall be in accordance with JAR-145.

8.1 A Certificate of Release to Service shall be issued after overhauls, repairs, replacements, modifications and mandatory inspections have been carried out on an aircraft, which is registered in the United Kingdom and has a Certificate of Airworthiness in force, except as follows:

- a) A Certificate of Release to Service is not required for certain prescribed repairs or replacements carried out on an aircraft not exceeding 2730 kg Maximum Total Weight Authorised with a Certificate of Airworthiness in the Private or Special Categories, provided the work has been carried out personally by the owner or Operator holding a pilot's licence. Details of the prescribed repairs or replacements permitted are contained in the Air Navigation (General) Regulations.
- b) If a repair or replacement of a part of an aircraft is carried out when the aircraft is at such a place that it is not reasonably practicable:
 - i) to carry out the work in a manner that a Certificate of Release to Service may be issued, or
 - ii) for the Certificate to be issued at that particular place, the Commander may fly the aircraft, if, in his opinion, it is safe to do so, to the nearest place at which a Certificate may be issued.

NOTE: The ANO prescribes that in such cases written particulars of the flight and the reasons for making it are to be given to the CAA within ten days thereafter.

8.2 A Certificate of Release to Service shall be issued at the completion of any Scheduled Maintenance Tasks specified by an Approved Maintenance Schedule on an aircraft which is registered in the United Kingdom and has a Certificate of Airworthiness in any category (except Special Category) except that:

- a) a Certificate of Release to Service is not required for certain Scheduled Maintenance Tasks carried out on an aircraft not exceeding 2730 kg Maximum Total Weight Authorised with a Certificate of Airworthiness in the Private Category, provided the inspection has been carried out personally by the owner or Operator holding a pilot's licence;

- b) the Certificate of Release to Service issued at the completion of any Scheduled Maintenance Tasks shall be signed in each of the licence/authorisation categories relevant to the work speciality of the particular Scheduled Maintenance Tasks, except that the CAA may direct, for specific aircraft types, that some 'X' category certifications are not required.
- 8.3 A Certificate of Release to Service shall only be issued for a particular overhaul, repair, replacement, modification, mandatory inspection or Scheduled Maintenance Tasks when the signatory is (signatories are) satisfied that the work has been properly carried out, having due regard to the use of:
- a) up-to-date and approved airworthiness data including manuals, drawings, specifications, CAA mandatory modifications/inspections and where applicable, company procedures;
 - b) recommended tooling and test equipment which is currently calibrated where applicable; and
 - c) a working environment appropriate to the work being carried out.
- 8.4 The Certificate of Release to Service shall contain particulars of work done or the inspection completed and the Organisation and place at which the work was carried out. Depending upon the application of the certificate, details of the aircraft type, registration, component type, part number and serial number shall be recorded as applicable. The certification shall be worded in the following manner:
- 'The work recorded above has been carried out in accordance with the requirements of the Air Navigation Order for the time being in force and in that respect the aircraft/equipment is considered fit for release to service.'**
- NOTES:**
- (1) Mandatory inspections, for the purpose of this Chapter A6-2, are those inspections classified as mandatory by the CAA, where the inspection itself is the work.
 - (2) For Organisations Approved in accordance with JAR-145, the certification may be issued in accordance with procedures specified in the Organisation Exposition.
- 8.5 The Certificate of Release to Service shall be signed by a person specified in 9 except that the CAA may direct which of these persons shall sign in a particular case. The signatory/signatories shall record licence/approval/authorisation reference number as appropriate, together with the date.

9 Certificate of Release to Service Signatories

- 9.1 For aircraft operated for the purpose of Commercial Air Transport, a Certificate of Release to Service shall only be issued by appropriately authorised staff on behalf of the JAR-145 Approved Maintenance Organisation, in accordance with procedures specified in the Maintenance Organisation Exposition.
- 9.2 For Non Commercial Transport purposes, a Certificate of Release to Service shall be issued only by one of the following:
- a) The holder of an aircraft maintenance engineer's licence granted under the Air Navigation Order, being a licence which entitles the holder to issue that certificate.

- b) The holder of an aircraft maintenance engineer's licence granted under the law of a country other than the United Kingdom and rendered valid under the Air Navigation Order in accordance with the privileges endorsed on the licence.
- c) The holder of an aircraft maintenance engineer's licence granted under the law of any such country as may be prescribed in accordance with the privileges endorsed on the licence and subject to any conditions which may be prescribed.
- d) The holder of an aircraft maintenance engineer's licence or authorisation as such an engineer granted or issued by or under the law of any Contracting State other than the United Kingdom in which the overhaul, repair, replacement, modification or inspection has been carried out, but only in respect of aircraft of which the Maximum Total Weight Authorised does not exceed 2730 kg and in accordance with the privileges endorsed on the licence.

NOTE: 'Contracting State' means any State which is a party to the Convention on International Civil Aviation signed on behalf of the Government of the United Kingdom at Chicago on 7th December 1944.

- e) A person, Approved by the CAA as being competent to issue such Certificates, and in accordance with that Approval.
- f) A person Authorised by the CAA to issue the Certificate in a particular case, and in accordance with that authority.
- g) A person Authorised by an Organisation Approved in accordance with JAR-145 as being competent to issue such a certificate and in accordance with that Authorisation and Approval.

9.3 In relation only to the adjustment and compensation of direct reading magnetic compasses, the holder of an Airline Transport Pilot's Licence (Aeroplanes), or a Flight Navigator's Licence granted or rendered valid under the Air Navigation Order may also issue a Certificate of Release to Service.

10 Duplicate Inspection

10.1 The procedures outlined in this paragraph shall be applied following initial assembly or any disturbance of a Vital Point (see A5-3, 3) or Control System.

10.2 Definitions

10.2.1 **Control System.** A system by which the flight path, attitude, or propulsive force of an aircraft is changed, including the flight, engine and propeller controls, the related system controls and the associated operating mechanisms.

10.2.2 **Duplicate Inspection.** An inspection first made and certified by one qualified person and subsequently made and certified by a second qualified person.

10.3 Procedures – General

10.3.1 A duplicate inspection of all Vital Points/Control Systems in an aircraft shall be made after initial assembly and before a Certificate of Release to Service has been issued after overhaul, repair, replacement, modification or adjustment and, in any case, before the first flight.

NOTE: Depending on the extent of the work it may be possible to limit the duplicate inspection of a Control System to that part of the system which has been disturbed.

10.3.2 The first and second inspections must take account of the full extent of the work undertaken and not simply the immediate area of disturbance. This is to ensure that distant or remote parts of the system that may have been affected by the disturbance

are also subject to duplicate inspections. Where work has been carried out on other systems for safety precautions, or to enhance accessibility, the need to carry out a duplicate inspection on these systems shall be considered. Persons who carry out and certify duplicate inspections are therefore required to undertake an independent review of the complete task, as detailed in the maintenance manual and by reference to worksheets used, including shift hand-over records, to assess the scope of the duplicate inspection(s) required.

10.3.3 It may not be possible to inspect the complete Vital Point/Control System when assembled in the aircraft, due to routing the controls through conduits or boxed-in sections and the pre-sealing of various units. In these cases the persons certifying the duplicate inspection shall be satisfied that a duplicate inspection has been made previously on the units and covered sections and that the sealed units are acceptable for the particular use. Such tests as are necessary shall be completed to determine that these particular units and sections have full, free and correct directional movement.

10.3.4 Vital Points/Control Systems subject to duplicate inspection must not be disturbed or re-adjusted after the first certified inspection and the second part of the duplicate inspection must, as nearly as possible, follow immediately after the first part.

- NOTES:**
- (1) In some circumstances, due to peculiarities of assembly or accessibility, it may be necessary for both parts of the inspection to be made simultaneously.
 - (2) It is desirable that the inspections of a Control System are made as near as is practicable to the time of the intended flight and that the full extent of the disturbance is understood by both persons who carry out the duplicate inspections.

10.3.5 If a Vital Point/Control System is disturbed after completion of the duplicate inspection, that part which has been disturbed shall again be inspected in duplicate and a Certificate of Release to Service issued before the aircraft flies.

10.3.6 The duplicate inspection shall be the final operation to establish the integrity of the Vital Point/Control System when all the work has been completed and shall take into account all the relevant instructions and information contained in the associated technical data.

10.3.7 The inspections prescribed for Control Systems in this Chapter shall include an inspection to ensure that full, free and correct movement of the controls is obtained throughout the systems relative to the movements of the crew controls. An additional inspection shall be made, when all covers and fairings are finally secured, to ensure that full, free and correct movement of the controls is obtained.

10.3.8 Persons qualified to make the first and/or second part of a duplicate inspection are as follows:

- a) Aircraft engineers appropriately licensed in Categories A, B, C, D and X.
- b) Persons employed by Approved Organisations, who are appropriately authorised to make such inspections and to certify the task itself in accordance with company procedures. For aircraft used for the purpose of Commercial Air Transport an Organisation will be required to hold JAR-145 Approval.

NOTE: Certification responsibilities in relation to the Air Navigation Order affecting Licensed Aircraft Maintenance Engineers and members of Approved Organisations are given in CAA Airworthiness Notice No. 3.

10.3.9 Should a minor adjustment of the Vital Point/Control System be necessary when the aircraft is away from base, the second part of the duplicate inspection may be completed by a pilot or flight engineer licensed for the type of aircraft concerned, providing that Authorisation is granted by the responsible JAR-145 Approved Maintenance Organisation, if the aircraft is being used for the purpose of Commercial Air Transport.

10.4 **Procedures – Control System Units or Components**

10.4.1 Where appropriate to the type of unit or component forming part of a Control System, a schedule of inspections and functioning tests shall be compiled at manufacture, overhaul and repair, and the following shall be certified:

- a) Duplicate inspection of the section/parts of the units or components which will be concealed during bench assembly and which cannot be proved during inspections and functioning tests when installed in the aircraft Control System.

NOTE: Where such work is a sub-contract order, instructions regarding all inspections/tests should be stated on the order, the release documentation from the sub-contractor being certified appropriately.

- b) Duplicate inspection of the completed assembly of the unit or component, functioning and checking for correct relative movement.

10.4.2 Persons qualified to make the first and/or second part of the duplicate inspection required at paragraph 10.4 are as follows:

- a) For Approved Manufacturing Organisations, persons employed who are appropriately authorised and qualified to make such inspections in accordance with company procedures. Persons employed by a sub-contracting firm, not directly Approved by CAA, who are appropriately authorised by the primary Approved Organisation with a Quality Control Surveillance System (see A8-1 and A8-2) controlling the sub-contractor, qualified to make such inspections.
- b) For Approved Maintenance Organisations who release Control System units and components, both inspections and the subsequent Certificates of Release to Service must be issued by persons authorised by the Maintenance Organisation Approved under JAR-145 or BCAR A8.

11 **Retention of Records**

11.1 When all the relevant work has been carried out, a Certificate of Release to Service shall be entered in/attached to the appropriate log book and signed by the authorised persons.

- a) Where it is more convenient, the required particulars may be entered in a separate record, but an entry shall be made in the appropriate log book, containing a summary of the work carried out and a cross-reference to the document containing the Certificate of Release to Service.
- b) Where an alternative record system has been agreed, the format and location of such certificates shall be in accordance with that agreement.
- c) Certificates of Maintenance Review shall be issued in duplicate. One copy shall be carried in the aircraft and the other copy shall be kept elsewhere than in the aircraft for a period of not less than two years from the date of issue or for such periods as may be otherwise agreed.

- NOTES:**
- (1) The Air Navigation Order requires that log books, and other documents which are identified and referred to in the log books (therefore forming part of the log books) shall be preserved until a date two years after the aircraft, the engine or the variable pitch propeller, as the case may be, has been destroyed, or permanently withdrawn from use, except that the CAA may consider a different retention period in a particular case.
 - (2) For aircraft operated for the purpose of Commercial Air Transport in accordance with JAR-OPS, the Operator shall ensure that maintenance records are retained in accordance with JAR-OPS and/or JAR-145 as appropriate.

Appendix 1 to A6-2

Reliability Centred Maintenance and Condition Monitored Maintenance Programmes

1 Introduction

1.1 This Appendix describes an acceptable means of compliance with the requirements of Chapter A6-2 and JAR-OPS Subpart M in respect of Reliability Centred and Condition Monitored Maintenance Programmes where maintenance task selection and frequency are based upon reliability predictions. The word "Programme" is used throughout and refers to the reliability monitoring procedures. Condition Monitored Maintenance concepts were fundamental to earlier Maintenance Steering Group (MSG) derived programmes (e.g. MSG 2) and where appropriate, the MSG analysis resulted in a condition monitoring task: Condition Monitored Maintenance is a form of Reliability Centred Maintenance. The Condition Monitor task was not used in later MSG revisions (e.g. MSG 3) but the concept of Reliability Centred Maintenance is, however, central to the continuing effectiveness of these later programmes where maintenance task selection and frequency are based upon reliability predictions.

1.2 MSG analysis and the attendant MRB procedures, are used by type certificate applicants to develop scheduling information to meet the JAR (FAR) 25.1529 instructions for continuing airworthiness. The MRB procedures may be found in JAA Administrative and Guidance Material Section 2, Part 2 Chapter 16, FAA AC 121.22A or Chapter A5-2. For type certification prior to the adoption of JAR-25, requirement for continuing airworthiness information is to be found in Chapter A5-3.

- NOTES:**
- 1 Further guidance on these concepts of maintenance control is contained in CAP 418 entitled 'Condition Monitored Maintenance Programmes, an Explanatory Handbook', published by the CAA.
 - 2 This Appendix additionally describes an acceptable means of achieving compliance with the requirements of JAR-OPS Subpart M in relation to the Approval of reliability programmes and procedures. This guidance will eventually be superseded by appropriate JAR-OPS guidance material.
 - 3 JAR OPS (Sub Part M) 1.910 requires that a Maintenance Programme includes a reliability programme when required by the CAA.

1.3 A description of how each part of the requirement of Chapter A6-2 will be met, should be included in the Preface of the Approved Maintenance Schedule. This description may, by agreement with the CAA, be presented in another form provided that full cross reference to associated documentation is made in the Approved Maintenance Schedule. In the case of the JAR-OPS Maintenance Programme, compliance with JAR-OPS is indicated and referenced in the Standard Maintenance Practice (SMP 20 or 21, see CAP 562) which should be appended to the Operator's programme.

2 The Programme

2.1 In preparing the Programme details for compliance with Chapter A6-2 or JAR-OPS Subpart M, account should be taken of this paragraph, and for engines and auxiliary

power units, account should also be taken of paragraph 3 of this Appendix. All associated procedures should be clearly defined. In the case of JAR–OPS Approval, the contents of these paragraphs are an acceptable means of meeting the requirement, pending the introduction of related JAR–OPS guidance material.

- 2.2 **Objectives.** A statement should be included summarising as precisely as possible the prime objectives of the Programme. The extent of the objectives should be directly related to the scope of the Programme, which could vary from a component defect monitoring system to an integrated maintenance management programme. The manufacturer's maintenance planning documents may give guidance on the objectives and should be consulted in every case.
- 2.3 **Identification of Items.** The Items controlled by the Programme should be stated. Where some items (e.g. aircraft structure, engines, APU) are controlled by separate inspection and development procedures, the associated procedures will be subject to individual Approval by the CAA, e.g. individual Sampling or Life Development Programmes, Manufacturer's Structure Sampling Programmes. In the case of a JAR–OPS Approved programme, these supplemental documents shall form part of the approved Maintenance Management Exposition (MME) or Maintenance Organisation Exposition (MOE) as appropriate and should be cross referenced in the programme.
- 2.4 **Terms and Definitions.** The significant terms and definitions applicable to the Programme should be clearly identified. Terms already defined in the World Airlines Technical Glossary of Terms and CAP 418 should be used. The number of other defined terms should be kept to a minimum.
- 2.5 **Information Sources and Collection**
- 2.5.1 Sources of information should be listed, and the procedures for the transmission of information from the sources, together with the procedure for collecting and receiving it, should be set out in detail. In the case of a JAR–OPS Approval, these procedures should be listed in the MME or MOE as appropriate.
- 2.5.2 The type of information to be collected should be related to the objectives of the Programme and should be such that it enables both an overall broad based assessment of the information to be made and also allows for assessments to be made as to whether any reaction, both to trends and to individual events, is necessary. The following are examples of the normal prime sources:
- a) Pilots Reports;
 - b) Technical Logs;
 - c) Aircraft Maintenance Access Terminal/On-board Maintenance System readouts;
 - d) Maintenance Worksheets;
 - e) Workshop Reports;
 - f) Reports on Functional Checks;
 - g) Reports on Special Inspections;
 - h) Stores Issues/Reports;
 - i) Air Safety Reports;
 - j) Reports on Technical Delays.
- 2.5.3 In addition to the normal prime sources of information, due account should be taken of continuing airworthiness and safety information promulgated by Airworthiness Authorities and Manufacturers.

2.6 **Pooling Arrangements.** In some cases, in order that sufficient data may be analysed, it may be desirable to 'pool' data: i.e. collate data from a number of Operators of the same type of aircraft, engine or APU. For the analysis to be valid, the aircraft concerned, mode of operation, and maintenance procedures applied must be substantially the same. Variations in utilisation between two Operators may more than anything, fundamentally corrupt the analysis. Although not exhaustive, the following list gives guidance on the primary factors which need to be taken into account:

- a) Aircraft, engine or APU design commonality;
- b) Modification embodiment state, including SB compliance;
- c) Operational environment, route structure, engine hour/cycle ratio;
- d) Aircraft age;
- e) Utilisation, e.g. low/high/seasonal etc;
- f) Respective fleet size;
- g) Operating rules applicable (e.g. ETOPS/RVSM/All Weather/JAR-OPS etc.);
- h) Operating procedures;
- i) Maintenance procedures;
- j) Maintenance standards applicable;
- k) Lubrication programme;
- l) MPD revision or escalation applied or maintenance programme/schedule applicable;
- m) Data collection procedures;
- n) Engine/APU refurbish/rework specification.

Although it may not be necessary for all of the foregoing to be completely common, it is necessary for a substantial amount of commonality to prevail. Changes by any one of the Operators to the above, requires assessment in order that the pooling benefits can be maintained. Where an Operator wishes to pool data in this way, the Approval of the CAA should be sought prior to any formal agreement being signed between Operators.

2.7 **Displays**

2.7.1 Collected information may be displayed in either graphical or tabular presentations or a combination of both. The rules governing any separation or discarding of information prior to incorporation into these displays should be stated. The format of any display should be such that the identification of trends, specific highlights and related arisings would be readily apparent.

2.7.2 Displays should include provisions for 'nil returns' to aid the examination of the total information.

2.7.3 Where 'standards' or 'alert levels' are included in the Programme, the display information should be oriented accordingly.

2.8 **Examination, Analysis and Interpretation of Information**

2.8.1 The method employed for examining, analysing and interpreting the Programme information should be explained.

- a) **Examination.** Methods of examination of information may be varied according to the content and quantity of information of individual Programmes. These can range from examination of the initial indication of performance variations to formalised detailed procedures at specified periods and the methods should be fully described in the Programme documentation.
- b) **Analysis and Interpretation.** The procedures for analysis and interpretation of information should be such as to enable the performance of the items controlled by the Programme to be measured. They should also facilitate recognition, diagnosis and recording of significant problems. The whole process should be such as to enable a critical assessment to be made of the effectiveness of the Programme as a total activity. Such a process may involve:
 - i) comparisons of operational reliability with established or allocated standards (in the initial period these could be obtained from in-service experience of similar equipment or aircraft types);
 - ii) analysis and interpretation of trends;
 - iii) the evaluation of repetitive defects;
 - iv) confidence testing of expected and achieved results;
 - v) studies of life-bands and survival characteristics;
 - vi) reliability predictions;
 - vii) other methods of assessment.

2.8.2 The range and depth of engineering analysis and interpretation should be related to the particular Programme and to the facilities available. The following, at least, should be taken into account:

- a) Flight defects and reductions in operational reliability;
- b) Defects occurring on-line and at main base;
- c) Deterioration observed during routine maintenance;
- d) Workshop and overhaul facility findings;
- e) Modification evaluations;
- f) Sampling programmes;
- g) The adequacy of maintenance equipment and publications;
- h) The effectiveness of maintenance procedures;
- i) Staff training;
- j) Service bulletins, technical instructions, etc.

2.8.3 Where the Operator relies upon contracted maintenance and/or overhaul facilities as input to the Programme, the arrangements for availability and continuity of such information should be established and details should be included.

2.9 **Corrective Actions**

2.9.1 The procedures and time scales both for implementing corrective actions and for monitoring the effects of corrective actions should be fully described. Corrective actions should correct any reduction in reliability revealed by the Programme and could take the form of:

- a) changes to operational procedures or techniques;

- b) maintenance changes involving inspection frequency and content, function checks, overhaul requirements and time limits, which will require amendment of the scheduled maintenance periods or tasks in the Approved Programme;
 - c) amendments to Approved manuals (e.g. Maintenance Manual, Crew Manual);
 - d) initiation of modifications;
 - e) special inspections or fleet campaigns;
 - f) spares provisioning;
 - g) staff training;
 - h) manpower and equipment planning.
- 2.9.2 The procedures for effecting changes to the Programme should be described, and the associated documentation should include a planned completion date for each corrective action, where applicable.
- 2.10 **Organisational Responsibilities.** The Organisational structure and the departments responsible for the administration of the Programme should be stated. The chains of responsibility for individuals and departments (Engineering, Production, Quality Control, Operations, etc.) in respect of the Programme, together with the formation and functions of any Programme control committees, should be defined. In the case of a JAR-OPS Maintenance Programme, this information should be contained in the MME or MOE as appropriate, as required by JAR-OPS.
- 2.11 **Presentation of Information to the CAA.** The production of reports and the notification of Programme events to the CAA will have to be agreed with the CAA. As the information to be supplied to the CAA will vary for individual Programmes, the Programme and its associated documentation should define at least the following:
- a) The format and content of routine and event reports;
 - b) The time scales for the production of reports together with their distribution;
 - c) Details of any special reports (Annual Reports, special investigations, etc.);
 - d) Reports supporting requests for increases in periods between maintenance (escalation) and for amendments to the Programme. These reports should contain sufficient detailed information to enable the CAA to make its own evaluation where necessary;
 - e) The production and distribution of agenda and minutes of various meetings related to the Programme and its functions;
 - f) The identification of the availability of any non-reportable information which may be used to support the Programme (e.g. 'in-house' information);
 - g) Any relationship between the reporting procedures of the Programme and the requirements for Mandatory Occurrence Reporting.
- 2.12 **Evaluation and Review**
- 2.12.1 Each Programme should describe the procedures and individual responsibilities in respect of continuous monitoring of the effectiveness of the Programme as a whole. The time periods and the procedures for both routine and non-routine reviews of maintenance control should be detailed (progressive, monthly, quarterly, or annual reviews, procedures following reliability 'standards' or 'alert levels' being exceeded, etc.).
- 2.12.2 Each Programme should contain procedures for monitoring and, as necessary, revising the reliability 'standards' or 'alert levels'. The Organisational responsibilities

for monitoring and revising the 'standards' should be specified together with associated time scales.

2.12.3 Although not exhaustive, the following list gives guidance on the criteria to be taken into account during the review:

- a) Utilisation;
- b) Fleet commonality;
- c) Alert level adjustment criteria;
- d) Adequacy of data;
- e) Reliability procedure audit;
- f) Staff training;
- g) Operating and maintenance procedures.

2.13 **Condition Monitored Maintenance.** Condition monitoring is not acceptable as the primary maintenance process for any items, the failure of which can produce:

- a) a hazardous increase in crew work load; or
- b) degradation of flight qualities, performance or strength of the aircraft; or
- c) fire; or
- d) the necessity for an unscheduled landing, marginal conditions for occupants or injury to occupants.

NOTE: This prohibition is not applicable to 'real-time' installed condition monitoring systems such as Helicopter Usage Monitoring system.

2.14 **Operator Reliability Programmes**

2.14.1 Operators who select to submit for approval a reliability centred maintenance programme, even though the TC holder may not require it, must include in the programme a classification listing which will indicate the importance of each item to continued airworthiness of the aircraft in the event of failure of the item so classified. Normally, this classification is applied after consultation between the Operator, manufacturer and the CAA, but, alternatively, due account may be taken of MRB findings and MSG logic analysis in arriving at the appropriate classification.

NOTE: The classification listing criteria may also be applied to maintenance schedules/programmes which do not employ an associated reliability programme, since the classifications have been found useful in determining airworthiness significance of escalation revisions.

2.14.2 Classifications should be as follows:

- a) Items, the failure of which, would reduce the airworthiness of the aircraft to an unacceptable level. The reliability of such items will be controlled by the allocation of an overhaul period and/or Failure Rate Monitoring.
- b) Items, the failure of which, may reduce the airworthiness of the aircraft but not to an unacceptable level. Such items will be controlled by Failure Rate Monitoring. Where it is known that an item is subject to wear or deterioration, the allocation of an overhaul period may be necessary.
- c) Items, the single failure of which does not affect the airworthiness of the aircraft.

NOTE: There are certain items in the aircraft, the failure of which, when associated with an emergency, could endanger the aircraft, e.g. warning circuits normally dormant. Such items may not be included in the above classification but are monitored in accordance with scheduled check inspection, functioning or test procedures.

3 Maintenance Programmes - Engines and Auxiliary Power Units

3.1 **Introduction.** This paragraph 3 defines an acceptable means of compliance with the requirements of Chapter A6-2 and JAR-OPS Subpart M for engines and auxiliary power units (engine/APU) in respect of Reliability Centred Maintenance and Condition Monitored Maintenance Programmes.

NOTE: In the case of programmes which are intended to comply with JAR-OPS Subpart M, this guidance material will eventually be superseded by appropriate JAR-OPS guidance material.

3.2 **Applicability.** A Reliability Centred Maintenance and Condition Monitored Maintenance Programme for an engine/APU is required when the restoration task for the engine/APU is not defined as either a Hot Section Inspection (HSI) and/or overhaul in accordance with the manufacturer's Approved engine overhaul manual.

3.3 **Approval.** Engine/APU Programmes should comply with this paragraph 3 and form part of the associated aircraft Programme. The procedures which are to be followed to obtain CAA Approval of Programmes, and amendments to them, are set out in Chapter A7-5.

3.4 The Programme

3.4.1 **Introduction.** An engine/APU Reliability Centred Maintenance and Condition Monitored Maintenance Programme provides for the integration of Reliability Analysis, Hard Time Control, On Condition and Condition Monitoring into one Programme. It may vary in size and scope depending on the complexity and number of different engine and APU types being controlled by the Programme. The Programme sets out the means to identify both on-wing and off-wing maintenance tasks. On-wing engine/APU maintenance tasks and their intervals are initially established from Maintenance Review Boards (MRBs). Off-wing maintenance tasks and intervals are initially established by means of threshold and opportunity samples, Manufacturer's Engine Maintenance Planning Guides and the inspection requirements of the Engine Manuals. The on-wing and off-wing maintenance tasks and intervals may be changed as a result of reviewing the experience gained by operating the Programme and information provided in Service Bulletins, Manual Revisions, Service Letters, Airworthiness Directives and other relevant sources.

NOTE: For the purposes of this Appendix, off-wing maintenance tasks are defined as the content of engine/APU rework or refurbish specifications and their associated time related intervals.

3.4.2 **Objectives.** A statement should be included summarising the objectives of the Programme, together with a definition of the engines/APU types controlled by the Programme and the associated aircraft in which those engine/APU types are installed.

3.4.3 **Identification.** The engine/APU Programme document can be unique and separate from the associated aircraft Programme or it can form part of the aircraft Programme. If it is a separate document, it should be identified by a reference number, issue number and date and be cross referred from the appropriate part of the aircraft Programme.

3.4.4 **Data Pooling Arrangements.** See paragraph 2.6 of the Appendix for the primary factors which, where appropriate, should be taken into account for engines and APUs.

3.4.5 **Sub-contract.** Both CAP 360 and JAR-OPS make provision for the Operator to enter into a sub-contract arrangement with an Organisation which has the necessary resources and experience on the engine/APU type, to manage the Programme, and is acceptable to the CAA. However, this sub-contract arrangement does not absolve

the Operator from the overall responsibility for ensuring the safe operation and continuing airworthiness of the aircraft to which the engine/APU is installed.

3.4.6 **Data Collection, Analysis and Interpretation.** (See also paragraphs 2.5 and 2.8 of this Appendix.) The data required for analysis and control of the engine/APU Programme together with associated procedures for the collection analysis and interpretation of the data should be defined in the Programme. In the case of a JAR-OPS approval, these procedures should be listed in the MME or MOE as appropriate. The following is typical of the data which should be collected for an engine/APU Programme:

- a) Oil consumption trend monitoring;
- b) Pilots reports;
- c) Aircraft Maintenance Access Terminal/On-board Maintenance System readouts;
- d) Boroscope inspection findings;
- e) Magnetic Chip Detector findings;
- f) In flight shut down, abandoned take-off, unscheduled removal rates and causes;
- g) Delay and cancellation rates and causes;
- h) Performance trend analysis;
- i) Engine and APU removal reports;
- j) Airworthiness Directives;
- k) Manufacturer's information and publications, e.g. Service Bulletins, Service Letters, All Operator Wires, etc;
- l) Engine/APU and Component Workshop Strip and Condition reports;
- m) Vibration monitoring;
- n) Sampling programme findings;
- o) Reliability Programme (statistical displays).

The final list of data to be collected, analysed and interpreted should be related to the objectives of the Programme and experience of operating the particular engine/APU type.

3.4.7 **Sampling Programme.** The Programme should define a threshold life at which a sample engine/module or APU should be scheduled for removal if sufficient data regarding engine/module or APU internal conditions has not been generated by previous scheduled or unscheduled removals. Subsequent requirements should be based upon a review of all applicable evidence e.g. defect investigations, workshop investigations, health monitoring data and evidence from other Operators.

3.4.8 **Technical Record Keeping and Life Limited Components.** The Programme should give details of the method used and organisational responsibilities for recording flying hours, engine/APU cycles, training 'touch and go' landings etc. which are needed to show compliance with the mandatory life limitations of the engine/APU and for controlling 'hard' and 'soft' time intervals.

3.4.9 **Refurbish and Rework Specifications.** Every engine, module and APU whose restoration task is not defined as either a HSI or Overhaul in accordance with an appropriate Overhaul Manual (Engine Manual) should have a rework or refurbish specification established in accordance with the procedures defined in the Programme. The Specification should define the minimum modification standard and

the degree of strip inspection and rework necessary to release an engine, module or APU for specified periods of service usage. The content of the Specification should be based upon the appropriate Manufacturer's Maintenance Planning Guides, threshold and opportunity samples, the inspection requirements of the engine manuals and the review and analysis of the data collected by the Programme.

- 3.4.10 **Repair and Overhaul Organisations.** The Programme should define the nominated JAR-145 Approved engine and APU repair and overhaul Organisations which are to be used, together with any contractual instructions to which the Organisations will be required to work. In the case of a JAR-OPS Programme, this information should be contained in the MME or MOE as appropriate.
- 3.4.11 **Corrective Actions.** (See also paragraph 2.9 of this Appendix). The Programme should define the means by which the collected data is routinely analysed and interpreted in order to monitor the effectiveness of the current on-wing and off-wing maintenance tasks and airworthiness of the fleet and so identify the need for any remedial action and appropriate timescales. The procedure for changing or escalating any of the on and off-wing tasks, inspections and time intervals should also be defined in the Programme.
- 3.4.12 **Organisational Responsibilities.** The Organisational structure of the Operator and where appropriate the sub-contracted maintenance, repair and overhaul Organisations responsible for the administration and control of the Programme should be defined. The responsibilities for decision making with respect to both the on-wing and off-wing elements of the Programme shall be clearly defined in the Programme. In the case of a JAR-OPS Programme, this information should be contained in the MME or MOE as appropriate, as required by JAR-OPS.
- 3.4.13 **Management Evaluation and Review.** (See also paragraph 2.12 of this Appendix). The Programme should be managed effectively and ensure that good communications prevail between the various technical and quality departments of the Operator and if appropriate, the sub-contracted maintenance, engine and APU repair and overhaul Organisations. The Programme should define how the review, agreement, coordination and communication are ensured in the following areas:
- a) **Contractual Arrangements.** Where the Operator sub-contracts any of the on-wing or off-wing engine/APU maintenance, repair and overhaul, both non JAR-OPS and JAR-OPS Programmes require the details of the arrangements for maintenance, repair and overhaul to be clearly defined in a written maintenance contract. This is necessary to ensure that the technical and quality personnel of all the sub-contract Organisations which are involved in the application of the contract have a common understanding of the technical requirements of the Programme and of their respective duties and responsibilities.
 - b) **Engine/APU Workscopes.** Each engine, module and APU upon removal from an aircraft, should have an individual workscope prepared. The workscope should detail the reason for removal, engine/APU hours and cycles accrued in service, list any outstanding defects and define the required work to be carried out during the shop visit, cross referring, where appropriate, to the refurbish specification. The content of the workscope should also reflect any corrective actions which the Programme has previously identified as needing to be carried out at this shop visit. Where sub-contract arrangements exist, the content of the workscope should be agreed by the Operator and the sub-contract maintenance, engine repair and overhaul Organisation as appropriate.

- c) **Rework and Refurbish Specification.** Regular liaison between the technical and quality personnel of the Operator and where appropriate, the sub-contract maintenance, engine/APU repair and overhaul Organisation should take place to review, and update the content of the engine, module and APU rework and refurbish specifications. The review should be based upon the results of the analysis conducted upon the data collected in accordance with paragraph 3.4.6 of this Appendix.
 - d) **Technical and Quality Review.** It is necessary for the Operator and where appropriate the sub-contracted maintenance, engine repair and overhaul Organisations to periodically review all of the data inputs and reliability analysis defined in the Programme together with any adverse quality audit findings and action taken. The review should seek to adjust 'alert levels', identify trends, address any reduction in reliability or increase of in-flight shut down rate, delays, and cancellations and so implement any necessary remedial action.
 - e) **Management Overview.** Every Programme should have a controlling body which is responsible for the implementation, decision making and overall running of the Programme. Management at a senior level (Quality Manager, Engineering Manager etc.) should periodically review the effectiveness of the Programme, and where necessary, implement changes.
- 3.4.14 **Changes to the Programme.** Any significant changes to the Programme will require Approval of the CAA. (See also paragraph 3.3 of this Appendix.)

Chapter A6-4 Weight and Balance of Aircraft

1 Introduction

This Chapter A6-4 prescribes the requirements for the weighing of aircraft, the determination of the corresponding centre-of-gravity position and the provision of information from which the loading for flight can be correctly determined.

NOTE: The Operator's responsibilities are prescribed in the Air Navigation Order and the Air Navigation (General) Regulations.

2 Definitions

2.1 **Basic Weight.** Basic Weight is the weight of the aircraft and all its basic equipment, plus that of the declared quantity of unusable fuel and unusable oil. In the case of turbine-engined aircraft and aircraft the Maximum Total Weight Authorised of which does not exceed 5700 kg, it may also include the weight of usable oil.

2.2 **Basic Equipment.** Basic Equipment is the unconsumable fluids, and the equipment which is common to all roles for which the Operator intends to use the aircraft.

2.3 **Variable Load.** Variable Load is the weight of the crew, of items such as the crew's baggage, removable units, and other equipment the carriage of which depends upon the role for which the Operator intends to use the aircraft for the particular flight.

2.4 **Disposable Load.** Disposable load is the weight of all persons and items of load, including fuel and other consumable fluids, carried in the aircraft, other than the Basic Equipment and variable Load.

NOTE: To obtain the total loaded weight it is necessary to add to the Basic Weight the weights of those Variable and Disposable Load items which are to be carried for the particular role for which the aircraft is to be used.

3 General

3.1 Aircraft shall be weighed when all manufacturing processes have been completed, and in accordance with the procedures in this paragraph 3.

NOTE: The CAA will consider applications from aircraft manufacturers and Operators to weigh certain types of aircraft on a sampling basis (i.e. representative aircraft, as weighed, would be acceptable for others of the same standard).

3.1.1 Aircraft the Maximum Total Weight Authorised of which exceeds 5700 kg shall be re-weighed within two years after the date of manufacture, and subsequent check weighing shall be made at intervals not exceeding five years, and at such times as the CAA may require.

3.1.2 Aircraft the Maximum Total Weight Authorised of which does not exceed 5700 kg, shall be re-weighed at such times as the CAA may require.

3.2 When an aircraft is weighed, the condition of the aircraft (i.e. the equipment and other items of load such as fluids in tanks) shall be recorded. The equipment installed should not differ from that included in the declared list of Basic Equipment associated with the Weight and Centre-of-Gravity Schedule or the Loading and Distribution Schedule as appropriate.

- 3.3 The Basic Weight and the corresponding c.g. position shall be determined and entered in the Weight and Centre-of-Gravity Schedule or in the Loading and Distribution Schedule as appropriate.
- 3.4 The CAA may require that the actual weight of the items of Variable Load be ascertained.
- 3.5 A Weighing Record containing records of the weighing and the calculations involved shall be made available to the CAA, and such records shall be retained by the Operator. When the aircraft is again weighed the previous Weighing Record shall be retained with the aircraft records.
- 3.6 Operators shall maintain records of all known weight and c.g. changes which occur after the aircraft has been weighed, and such records shall be retained by the Operator.

4 Weight and Balance Report - Aircraft Exceeding 5700 kg

- 4.1 A Weight and Balance Report shall be produced for each Prototype, Variant and Series aircraft the Maximum Total Weight Authorised of which exceeds 5700 kg.

5 Weight and Centre-of-Gravity Schedule - Aircraft Exceeding 2730 kg (see A7-10 Appendix No. 1)

A Weight and Centre-of-Gravity Schedule shall be provided for each aircraft the Maximum Total Weight Authorised of which exceeds 2730 kg, except that for an aircraft the Maximum Total Weight Authorised of which exceeds 5700 kg the information contained in Parts B and C of the Schedule may, for a new aircraft, be given as part of the Weight and Balance Report.

6 Weight and Centre-of-Gravity Schedule - Aircraft Not Exceeding 2730 kg (see A7-10 Appendix No. 2)

For aircraft the Maximum Total Weight Authorised of which does not exceed 2730 kg, either a Weight and Centre-of-Gravity Schedule which complies with 5 and shall contain instructions for the determination of the loaded weight, the total moments and resultant c.g positions, or a Loading and Distribution Schedule which complies with Paragraph 3, Chapter A7-10 shall be provided.

Appendix 1 to A6-4 Weight and Balance of Aircraft - Fleet Mean Weight and Fleet Mean Centre-of-Gravity

1 Introduction (see A6-4, 3)

An alternative arrangement to the periodical check weighing of individual aircraft is to establish a Fleet Mean Weight and Fleet Mean Centre-of-Gravity Position, and this method is acceptable to the CAA where an Operator uses three or more aircraft of the same type. Application for acceptance of this arrangement should be made in writing to the CAA Safety Regulation Group, giving a table of aircraft weights which it is intended will form the basis of the Fleet Mean Weight. Where such an arrangement is adopted, the provisions of this Appendix No. 1 will apply.

2 General

The Initial Fleet Mean Weight should be based on the mean of the weights of all the aircraft of the same type in the fleet, and this should be reviewed annually by sample weighing (see 3).

- 2.1 The Fleet Mean Weight is the greatest of the following weights:
 - a) The mean Basic Weight of all aircraft of the same type in the fleet.
 - b) The mean Basic Weight of aircraft of the same type in the most recent sample weighings.
 - c) The Basic Weight of the heaviest aircraft in the fleet, less 0.5% of the Maximum Landing Weight.
- 2.2 If a Fleet Mean Weight is used, a weight control system should be established to account for modifications and repairs. Where there is a weight increase greater than 0.2%, the CAA should be informed in order to consider the validity of the established Fleet Mean Weight.
- 2.3 Where the weight of an aircraft differs significantly from the remainder of the fleet it is acceptable to exclude this from the fleet. Separate fleets may be established each with differing Fleet Mean Weights.
- 2.4 To establish a Fleet Mean Weight for an existing fleet of aircraft to which will be added other aircraft of the same type, the new Fleet Mean Weight should be based on an up-to-date sample in accordance with the sampling procedures (see 3) drawn in proportion to the relative sizes of the original fleet and the additional aircraft.

3 Periodical Sampling Procedures

3.1 The number of aircraft to be weighed each year is:

Number in Fleet	Number to be Weighed
3	3
4 and 5	4
6 and 7	5
8 to 13	6
14 to 23	7
24 and over	6 plus 10% of the number of aircraft over 9

3.2 The number of samples may be reduced, by prior agreement with the CAA, where it can be shown that the variation in fleet weights is not significant from year to year.

3.3 Periodical sample weighings should be made in accordance with 3.1 from those aircraft in the fleet which show the greatest elapsed time between weighings.

4 Fleet Mean Centre-of-Gravity Position

This should be established by using the same appropriate procedures as for the Fleet Mean Weight, except that an aircraft with a c.g. position greater than 0.5% SMC from the Fleet Mean C.G. Position should not be included in the fleet.

Chapter A6-5 Minimum Equipment Lists

1 Introduction

- 1.1 Article 16 of the United Kingdom (UK) Air Navigation Order 2000 as amended requires the permission of the Civil Aviation Authority (CAA) to be obtained before an aircraft may be despatched with an unserviceability.
- 1.2 Information and instructions intended to enable the determination of the measure of unserviceable equipment and systems which may exist at the commencement of a flight while still allowing the safe operation of the affected aircraft shall be provided in the form of a Minimum Equipment List (MEL). (See CAP 360 Part One.) The MEL shall be prepared by the Operator and shall be no less restrictive than the approved MMEL for the same aircraft type (see CAP 549).
- 1.3 Unless otherwise determined by the CAA the format in which the MEL is to be presented should conform to that prescribed in paragraph 4 of BCAR Chapter A7-6 and Chapter 4, paragraph 7 of CAP 360 Part One.

2 Applicability

See BCAR Chapter A5-7 paragraph 2.

3 Submission of MEL

See CAP 360 Part One Chapter 4, paragraph 7.

4 Charges

CAA charges for the investigation of the MEL will form an integral part of the charges levied for the issue or renewal of the Air Operator's Certificate (AOC).

5 Acceptance of the MEL

Following investigation by the CAA, acceptance of the MEL will be signified to the Operator by means of the issue of the Permission referred to in Article 16 of the UK ANO.

6 Amendment of Minimum Equipment List

- 6.1 Amendment of the MEL will be required in all cases where the MMEL has been amended such that it becomes more restrictive. In such cases where the Operators MELs are in line with the MMEL they must be amended and re-submitted for acceptance by the CAA within 30 days of the publication of the corresponding amendment to the MMEL.
- 6.2 The amendment of the MEL to reflect an already approved change to the MMEL which is less restrictive will be at the discretion of the Operator.

7 Reference Documents

Reference to BCAR Chapters A5–7 and A7–6, CAP 360 Part One and Part Two, CAP 450 and CAP 549 is recommended.

Chapter A6-6 CAA Airworthiness Directive Implementation Procedure Applicable to Products and Equipment

1 Introduction

1.1 Modifications, inspections and changes to approved documentation considered essential for airworthiness will be classified as mandatory by the CAA in consultation, where appropriate, with the responsible Approved Organisation, and the compliance date, limiting flying hours, cycles, and details relating to the action prescribed, will be decided. In making this decision the degree of urgency and availability of modified parts will be taken into account. In accordance with provision of Article 9(7) of the Air Navigation Order 2000 the following are mandatory:

- a) Those notified in a CAA Airworthiness Directive. Wherever possible, CAA Airworthiness Directives adopt advice promulgated by the product Type Design Organisation or Type Responsibility Agreement holder through documents such as Service Bulletins and Flight Manual amendments.
- b) Those notified in a CAA Emergency Airworthiness Directive.
- c) Those necessary to comply with CAA Airworthiness Notices of a mandatory character.

NOTES: (1) The term 'Mandatory' should only appear in documents promulgated by a Regulatory Authority.

(2) Documents issued by Type Design Organisation prior to the date of this requirement may still retain use of the word 'mandatory'.

1.2 The CAA will promulgate Airworthiness Directives after due consultation with responsible Approved Organisations and as a result of assessment of modifications, inspections and variations indicated below.

1.3 The provisions of Article 9(7) of the Air Navigation Order 2000 are such that a Certificate of Airworthiness in respect of an aircraft registered in the United Kingdom will cease to be in force until any modifications or inspection, being a modification or inspection required by the CAA, are completed. Furthermore, under the provisions of Article 8 of the Air Navigation Order 2000, an aircraft shall not fly unless any conditions subject to which the Certificate of Airworthiness was issued or rendered valid are complied with. (See BCAR A5-6 Paragraph 1.)

1.4 For the purpose of compliance with Article 9(7) and under the provisions of Article 71(5), a modification, inspection or change to approved documentation required by the CAA, is one which has been classified as mandatory by the CAA. It is, therefore, incumbent on the Operator to ensure that he is aware of the published Airworthiness Directive information and the associated Service Bulletins, or equivalent documents, concerning the action to be taken in respect of his aircraft including its engines, propellers, radio, accessories, instruments, equipment and approved documents, and to act accordingly.

1.5 In certain instances, requirements for mandatory modifications, inspections and variations are issued in respect of foreign manufactured engines and equipment fitted to UK constructed aircraft. Likewise requirements for mandatory modifications,

inspections and variations are issued in respect of UK manufactured engines and equipment fitted to foreign constructed aircraft on the UK register. Operators are, therefore, reminded that the total requirements for a complete aircraft including its equipment may, in this case, only be ascertained by making reference to the paragraphs of this Chapter A6-6 together with Chapter B6-6 for foreign manufactured products.

- 1.6 If, in the course of work connected with matters dealt with in this Chapter, the Operator becomes aware of any potential airworthiness problems he should, without delay, advise the local CAA Regional Office. (See Airworthiness Notice No. 29 for list.)

2 Products and Equipment of UK Manufacture

- 2.1 The following modifications inspections and variations are classified as mandatory:
- a) Those notified in a CAA Airworthiness Directive. Wherever possible, CAA Airworthiness Directives adopt advice promulgated by the product Type Design Organisation, Type Responsibility Agreement holder or equipment Approval holder, through documents such as Service Bulletins and Flight Manual amendments.
 - b) Those notified in a CAA Emergency Airworthiness Directive.
 - c) Those necessary to comply with CAA Airworthiness Notices of a mandatory character. Airworthiness Notices are not affected by the procedures in this Chapter.
- 2.2 Wherever possible, the criterion for embodiment or compliance is fixed to coincide with periodical inspections or overhauls so that the Operator has a reasonable amount of time for carrying out the work. In addition, consideration is given to the possibility of a special inspection procedure as, at least, a temporary alternative to the embodiment of a modification. Operators and their contracted maintenance organisations are expected, when necessary, to make priority arrangements to achieve compliance within the period specified.
- 2.3 The CAA will publish any associated Airworthiness Directives and advise the Responsible Authority of all ICAO Contracting States. The method of notification (e.g. telefax, telex, or airmail) will depend upon the urgency of the information.
- 2.4 In addition to the notification by the CAA, all modifications, inspections or variations, which become the subject of an Airworthiness Directive, will be made available by the product Type Design Organisation or equipment Approval holder, as a Service Bulletin or Flight Manual amendment etc., to all known Operators of the aircraft and to all Airworthiness Authorities to whom those Operators are responsible.

- NOTES:**
- 1 In view of the notification procedure described in paragraphs 2.3 and 2.4, Operators and organisations undertaking maintenance or overhaul of aircraft have a duty to ensure that their names and addresses are known to the product Type Design Organisation or equipment Approval holder of the aircraft for which they are responsible.
 - 2 The Airworthiness Directive shall refer to the specific issue number of the Service Bulletin or equivalent document.

- 2.5 Information on mandatory modifications, inspections and variations applicable to UK products is summarised in the publication 'Mandatory Aircraft Modifications and Inspections Summary', published by the CAA. Details are given in Airworthiness Notice No. 6.

3 CAA Additional Airworthiness Directives

- 3.1 The CAA may vary the content or application of a foreign Airworthiness Directive, in which case details will be promulgated in a CAA Additional Airworthiness Directive¹ preceded, if necessary, by a CAA Emergency Airworthiness Directive. Where the CAA has issued a CAA Additional Airworthiness Directive in advance of the notification by the Responsible Authority of the State of Design, the CAA Directive shall be observed, unless subsequently revoked.
- 3.2 In addition to the purpose described in paragraph 3.1, CAA Additional Airworthiness Directives are also used to notify mandatory modifications, inspections and variations additional to those notified by the Responsible Authority of the Country of Origin.
- 3.3 In respect of large transport aeroplanes (MTWA exceeding 5700 kg), helicopters exceeding 2730 kg MTWA and all twin engined helicopters below that weight, the investigation to establish the need for a CAA Additional Airworthiness Directive is carried out by the CAA in close cooperation with the Operators of the type. Except where urgency is involved which merits the immediate issue of a CAA Emergency Airworthiness Directive, Operators, the Type Design Organisation and the Responsible Authority of the State of Design will be formally notified of the intention to issue a CAA Additional Airworthiness Directive, and a period of 31 days will be allowed for them to comment.
- 3.4 Notification of mandatory modifications, inspections and variations, applicable to foreign manufactured products (both foreign Airworthiness Directives and CAA Additional Airworthiness Directives) is by issue of amendments to the three volumes of the publication 'Foreign Airworthiness Directives' published by the CAA. This publication deals separately with products of USA manufacture and those manufactured in foreign countries other than the USA. Details are given in Airworthiness Notice No. 6. Because of delays inherent in the system, for any product the definitive list will have to be agreed with the CAA.

- NOTES:**
- (1) It is important that Operators of foreign products on the UK register arrange to receive copies of 'Foreign Airworthiness Directives' and use the latest issue so that any requirements additional to the previous issue can be complied with.
- (2) Foreign Airworthiness Directives usually refer to bulletins, etc. generated by the responsible Type Design Organisation, therefore owners, Operators and organisations undertaking maintenance or overhaul of aircraft should ensure that their names and addresses are known to the Type Design Organisation of the aircraft for which they are responsible.

4 CAA Emergency Airworthiness Directives

- 4.1 CAA Emergency Airworthiness Directives may be issued for both UK and Foreign constructed products. They are used to notify mandatory modifications, inspections and variations where the degree of urgency is such that it is not practical to use the normal channels.
- 4.2 CAA Emergency Airworthiness Directives are sent by the CAA to Operators of UK registered aircraft of the type. For UK products, copies of CAA Emergency Airworthiness Directives are sent to foreign Authorities responsible for the regulation

1. Issued in the CAA Publication 'Foreign Airworthiness Directives'.

of Operators of such products. In the case of foreign products, copies are also sent to the Responsible Authority of the State of Design, and to the foreign Type Design Organisation. The method of notification is by telefax, telex or by first class mail, as appropriate.

- 4.3 The normal publication action will be taken in due course.

5 Work and Certifications

- 5.1 Work undertaken in incorporating a mandatory modification, or in carrying out a mandatory inspection, shall be accomplished under the control of an appropriately approved organisation or an appropriately licensed aircraft maintenance engineer.
- 5.2 Where it is necessary to amend the particulars in the Certificate of Airworthiness or Flight Manual, the Certificate or Manual shall, unless agreed otherwise by the CAA, be forwarded to the local Regional Office of the CAA.
- 5.3 Where an Airworthiness Directive (AD) introduces a Variation to an aircraft Flight Manual or Performance Schedule, the introduction of the Variation into the appropriate document shall be undertaken by the Operator responsible for the aircraft. A copy of the Airworthiness Directive shall be attached to the Flight Manual or Performance Schedule to denote compliance in addition to any revisions produced by the Type Design Organisation which are complementary to the Airworthiness Directive.

In addition to introducing a copy of the Directive into the appropriate document, an entry shall be made in the Aircraft Technical Log, where appropriate, or the Aircraft Airframe Log Book, identifying the AD, and these shall be certified by the Operator or a pilot authorised by the Operator, in the manner prescribed in the AD.

- 5.4 Full particulars of the work done to incorporate the modification, or details, results and work arising from the mandatory inspection, shall be entered in the appropriate log book, quoting the reference number of the appropriate document, e.g. Airworthiness Approval Note for a Major modification, Service Bulletin for a mandatory inspection. A Certificate of Release to Service shall be completed, where appropriate, and attached thereto.
- 5.5 All relevant records of modifications, mandatory inspections and variations shall be made available to the CAA for examination on request, and these shall not be destroyed without authorisation from the CAA.

NOTE: The Air Navigation Order requires that log books, and other documents which are identified and referred to in the log books (therefore forming part of the log books) shall be preserved until a date two years after the aircraft, the engine or the variable pitch propeller, as the case may be, has been destroyed, or permanently withdrawn from use.

- 5.6 When a change has been made to a component which has already been the subject of a mandatory modification and this has produced a new or modified component which achieves all the objectives of the previous mandatory modification, the latter modification becomes an acceptable alternative to the previous one, and shall be shown in the Operator's modification system and associated documentation.

Chapter A6-7 Certification of Inspections, Overhauls, Modifications, Repairs and Replacements

1 Introduction

In accordance with the Air Navigation Order an aircraft registered in the United Kingdom being an aircraft in respect of which a Certificate of Airworthiness issued or rendered valid under the Air Navigation Order is in force, shall not fly unless there is in force a Certificate of Release to Service issued in respect of any overhauls, repairs, replacements, modifications, maintenance, mandatory inspections or scheduled maintenance inspections to the aircraft or any part of the aircraft or such of its equipment as is necessary for the airworthiness of the aircraft. In addition, a Certificate of Release to Service is required for all such work carried out on radio equipment and equipment specified in Schedule 5 of the Air Navigation Order. Certain exclusions are identified in paragraphs 2.1 and 2.2. This Chapter A6-7 concerns inspections, overhauls, modifications, repairs and replacements applicable to aircraft and, where appropriate, to components, engines, propellers, radio apparatus, accessories, instruments, equipment, their installations and the issue of certificates of release to service thereto.

- NOTES:**
- 1 Owners, Operators, and organisations undertaking overhaul/maintenance on aircraft should ensure that the manufacturer of each type of aircraft is informed of their names and addresses to facilitate distribution of the documents notifying mandatory modifications and inspections.
 - 2 Information distributed in accordance with Airworthiness Notice No. 36, is summarised in the CAA Publication entitled 'Mandatory Aircraft Modifications and Inspections Summary' which will be supplied to foreign Airworthiness Authorities on application to the Civil Aviation Authority (see CAA Airworthiness Notice No. 22).

2 Inspections, Overhauls, Modifications, Repairs and Replacements

2.1 General

- 2.1.1 Inspections, overhauls, modifications, repairs, and replacements shall be carried out in accordance with the Approved Manuals, drawings and schedules related thereto, and any other documents required or recognised, by the CAA.
- 2.1.2 Further, in the case of structural repairs to an aircraft, where the repairs are of a major nature, or not covered in the particular Approved Manual, the Approved Organisation or the appropriately licensed aircraft maintenance engineer concerned, shall advise the nearest CAA Area Office of the nature of the repairs before the work commences (see Airworthiness Notice No. 29 for list of addresses). Repair schemes, not previously approved by the CAA, will be investigated as modifications in accordance with the procedures in Chapter A2-5.
- 2.1.3 Replacement parts shall be certified by an Organisation approved by the CAA for the purpose, or by an alternative procedure agreed by the CAA.

2.2 Work and Certifications

- 2.2.1 Inspections, overhaul, modification, repair, and replacement work shall be supervised by an Organisation approved by the CAA for the purpose (see Sub-Section A8) or by an appropriately licensed aircraft maintenance engineer.
- 2.2.2 Where the work is to be carried out on an aircraft registered in the United Kingdom by a foreign Organisation not approved by the CAA, suitable arrangements shall be agreed with the CAA Safety Regulation Group (see paragraph 2.2.6).
- 2.2.3 Depending on the nature of the overhaul, modification, repair, or replacement made to the aircraft, the following may be required by the CAA:
- a) The aircraft to be weighed, and an amended Weight and Centre-of-Gravity Schedule, or its equivalent as prescribed in Chapter A7–10 to be prepared.
 - b) A Certificate of Fitness for Flight issued (see Chapter A3–8) and the aircraft to be tested in flight to schedules approved by the CAA in accordance with Chapter A6–8.
- 2.2.4 Before a Certificate of Release to Service or its foreign equivalent is issued, the work shall have been inspected, and tested where necessary, in conformity with the specifications, drawings and instructions relating to the modification or mandatory inspection. Where appropriate, the instructions shall include a copy of the original Airworthiness Approval Note for a Major modification, or a copy of the CAA Form AD 261 for a Minor modification.
- 2.2.5 The aircraft shall be made available to enable the CAA to inspect it as necessary.
- 2.2.6 When the work has been fully inspected, and tested where necessary, for conformity with the specifications, drawings and instructions relating to the overhaul, modification, repair or replacement, the necessary certification and, where appropriate, log book entries shall be completed in accordance with paragraph 5. Where applicable the instructions shall include a copy of the original Airworthiness Approval Note for a major modification, or a copy of the CAA Form AD 261 for a minor modification. Where the work has been carried out by a foreign Organisation, in accordance with paragraph 2.2.2, the Organisation for whom the work has been carried out shall raise a Certificate of Release to Service where such is required, using the foreign certificate as evidence that an acceptable standard has been achieved.

3 Certificate of Release to Service

- 3.1 A Certificate of Release to Service shall be issued after overhauls, modifications, repairs, replacements, modifications and mandatory inspections have been carried out on an aircraft, which is registered in the United Kingdom and has a Certificate of Airworthiness in force, except as follows:
- a) A Certificate of Release to Service is not required for certain prescribed repairs or replacement carried out on an aircraft not exceeding 2730 kg Maximum Total Weight Authorised with a Certificate of Airworthiness in the Private or Special Categories, provided the work has been carried out personally by the owner or Operator holding a pilot's licence. Details of the prescribed repairs or replacements permitted are contained in the Air Navigation (General) Regulations.
 - b) If a repair or replacement of a part of an aircraft is carried out when the aircraft is at such a place that it is not reasonably practicable
 - i) to carry out the work in a manner that a Certificate of Release to Service may be issued, or

- ii) for the Certificate to be issued at that particular place, the Commander may fly the aircraft, if, in his opinion, it is safe to do so, to the nearest place at which a Certificate may be issued.

NOTE: The ANO prescribes that in such cases written particulars of the flight and the reasons for making it are to be given to the CAA within ten days thereafter.

- c) A Certificate of Release to Service is not required for any overhaul, repair, or modification, carried out on items specified in the Air Navigation Order, Schedule 4, paragraph 3.
- 3.2 A Certificate of Release to Service shall only be issued for a particular inspection, overhaul, modification, repair or replacement when the signatory is (signatories are) satisfied that the work has been properly carried out, having due regard to the use of:
- a) up-to-date instructions including manuals, drawings, specifications, CAA mandatory modifications/inspections and company procedures;
 - b) recommended tooling and test equipment which is currently calibrated where applicable; and
 - c) a working environment appropriate to the work being carried out.
- 3.3 The Certificate of Release to Service shall contain particulars of the work done or the inspection completed and the organisation and place at which the work was carried out. Depending upon the application of the certificated, details of the aircraft type, registration, component type, part number and serial number shall be recorded as applicable. The certification shall be worded in the following manner:
- 'The work recorded above has been carried out in accordance with the requirements of the Air Navigation Order for the time being in force and in that respect the aircraft/ equipment is considered fit for release to service.'**
- 3.4 The Certificate of Release to Service shall be signed by a person specified in paragraph 4 except that the CAA may direct which of these persons shall sign in a particular case. The signatory/signatories shall record licence/approval/authorisation reference number as appropriate, together with the date.

4 Certificate of Release to Service Signatories

- 4.1 A Certificate of Release to Service shall be issued only by one of the following:
- a) The holder of an aircraft maintenance engineer's licence granted under the Air Navigation Order, being a licence which entitles the holder to issue that certificate.
 - b) The holder of an aircraft maintenance engineer's licence granted under the law of a country other than the United Kingdom and rendered valid under the Air Navigation Order, in accordance with the privileges endorsed on the licence.
 - c) The holder of an aircraft maintenance engineer's licence granted under the law of any such country as may be prescribed, in accordance with the privileges endorsed on the licence and subject to any conditions which may be prescribed.
 - d) The holder of an aircraft maintenance engineer's licence or authorisation as such as an engineer granted or issued by or under the law of any Contracting State other than the United Kingdom in which the overhaul, repair, replacement, modification or inspection has been carried out, but only in respect of aircraft of which the Maximum Total Weight Authorised does not exceed 2730 kg and in accordance with the privileges endorsed on the licence.

NOTE: 'Contracting State' means any State which is a party to the Convention on International Civil Aviation signed on behalf of the Government of the United Kingdom at Chicago on 7th December 1944.

- e) A person, approved by the CAA as being competent to issue such Certificates, and in accordance with that approval.
- f) A person authorised by the CAA to issue the Certificate in a particular case, and in accordance with that authority.
- g) A person Approved in accordance with JAR-145 and in accordance with that Approval.

4.2 In relation only to the adjustment and compensation of direct reading magnetic compasses, the holder of an Airline Transport Pilot's Licence (Aeroplanes), or a Senior Commercial Pilot's Licence (Aeroplanes), or a Flight Navigator's Licence granted or rendered valid under the Air Navigation Order may also issue a Certificate of Release to Service.

5 Retention of Records

5.1 When all the relevant work has been carried out, a Certificate of Release to Service shall be entered in/attached to the appropriate log book and completed in accordance with this Chapter A6-7.

- a) Where it is more convenient, the required particulars may be entered in a separate record, but an entry shall be made in the appropriate log book, containing a summary of the work carried out and a cross-reference to the document containing the Certificate of Release to Service.
- b) Where an alternative record system has been agreed then the format and location of such certificates shall be in accordance with that agreement.
- c) Where work has been carried out in accordance with the provision of 3.1 (b) then the details of such work together with the date, pilot's licence number and signature of the person who carried out the work shall be entered in the appropriate log book.

5.2 Full particulars of work done to incorporate modifications shall be entered in the appropriate log book, quoting the reference number of the appropriate document, e.g. Airworthiness Approval Note for a Major modification, Service Bulletin for a mandatory inspection. A Certificate of Release to Service shall be issued, where appropriate, and attached thereto (see 2.2.6).

5.3 When it is more convenient, the information required by 5.2 may be entered in a separate record which shall be certified in the same manner as that required for entry in the appropriate log book. The reference number of this record, and the place where it may be examined, shall be entered in the log book under a brief description of the particular modification. A similar record shall be kept when log books are not required.

5.4 All relevant records of mandatory inspections, overhauls, modifications, repairs and replacements shall be made available to the CAA for examination on request, and these shall not be destroyed without authorisation from the CAA.

NOTE: The Air Navigation Order requires that log books, and other documents which are identified and referred to in the log books (therefore forming part of the log books) shall be preserved until a date two years after the aircraft, the engine or the variable pitch propeller, as the case may be has been destroyed, or permanently withdrawn from use.

6 Manuals

- 6.1 Amendments to Manuals, i.e. the Flight Manual (see A7-2), Maintenance, Overhaul and Repair Manuals (see A7-4) or the Crew Manual (see A7-3) or the Maintenance Schedule (see A7-5) arising from the incorporation of a Major or Minor modification in an aircraft shall be made in accordance with the requirements of the particular Chapters. In the case of Minor modifications approved under CAA Form AD 261 procedure the Applicant shall submit details of the proposed amendments to the CAA for approval.
- 6.2 Where it is necessary to amend the particulars in the Certificate of Airworthiness or Flight Manual, the Certificate or Manual shall, unless agreed otherwise by the CAA, be forwarded to the local Regional Office of the CAA.

7 Work by Foreign Organisations Not Approved by the CAA

- 7.1 Where the CAA has entered into a special arrangement with a foreign country, the supervision and associated release documentation should follow the terms of that agreement.
- 7.2 In the absence of a special arrangement in accordance with 7.1, 7.2.1 or 7.2.2 may be applied.
- 7.2.1 Where the airworthiness arrangements in the foreign country achieve a standard acceptable to the CAA, work may be accepted from organisations within that country provided it is accompanied by a suitable certificate supported by the Responsible Authority of the state concerned. The type of work, detail arrangements and form of certification required should be agreed in consultation with the CAA.
- 7.2.2 Work from other foreign Organisations not in countries covered by 2.2.1 may be accepted on an ad hoc basis, and the arrangements should be agreed, case by case, with the CAA.

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Chapter A6-8 Flight Testing after Modification or Repair

1 General

1.1 The flight testing of aircraft shall comply with the procedures set out in this Chapter A6-8, as follows:

- a) Modifications to aircraft and variants of United Kingdom construction under investigation for the issue of a Certificate of Airworthiness or a Permit to Fly.
- b) Aircraft which have undergone structural repairs which could affect their flight characteristics.

NOTE: Owners are required to arrange adequate insurance to cover damage to the aircraft and to third parties (see CAA Airworthiness Notice No. 66).

1.2 In order that the CAA may accept reports on flight test matters, the qualifications and experience of personnel involved in flight testing under the provisions of this Chapter shall be acceptable to the CAA. Flight test personnel shall be provided with adequate facilities and equipment for the effective performance of their duties.

NOTE: Organisations approved in accordance with A8-9 to fly aircraft under 'B' Conditions of the Air Navigation Order comply with this requirement.

2 Modifications and Repairs to Aircraft and Variants

2.1 The requirements and procedures of this paragraph 2 are applicable:

- a) in respect of modifications to aircraft;
- b) in respect of repairs to aircraft.

2.2 If in the opinion of the CAA, the design of an aircraft is so modified as to affect the flight characteristics or the functioning in flight of the aircraft, the CAA may decide that a flight test evaluation is required; in which case the procedures of A2-3 shall be followed, except where any part is clearly inapplicable. The schedule of flight testing shall include:

- a) the flight tests necessary to re-establish compliance with the appropriate airworthiness requirements;
- b) the flight tests necessary to provide new or revised information for inclusion in the documents associated with the Certificate of Airworthiness (or Permit to Fly);
- c) flight tests as contained in the approved Airworthiness Flight Test Schedule for an aircraft of the basic type concerned (A3-3) except where these tests are covered by the tests referred to in a) and b).

2.3 Where no specific flight test evaluation is required, the aircraft shall be flight tested as a Series aircraft in accordance with A3-3.

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Sub-section A7
Procedures for the Approval of
Documents and Manual for Operation
and Maintenance of Aircraft

Chapter A7-2 Flight Manuals

1 Introduction

1.1 A Flight Manual is a document prescribed by the International Civil Aviation Organisation and is intended primarily for use by the flight crew. The Manual contains limitations, recommended procedures and information of a nature such that adherence to it will enable the level of safety which is intended by the Airworthiness Requirements and the Air Navigation legislation to be regularly achieved. The Flight Manual, by definition in the Air Navigation Order, forms part of the Certificate of Airworthiness.

- NOTES:** (1) The requirements of this Chapter do not apply to aircraft of which the prototype was certified before 5th April, 1949.
- (2) In this Chapter A7-2, the term 'Flight Manual' includes any documents accepted in place of a Flight Manual.

1.2 Flight Manuals and amendments thereto shall be approved, amended, and published in accordance with the procedures set out in this Chapter A7-2.

2 Aircraft Designed and Constructed in the United Kingdom

2.1 **Applicability.** The requirements and procedures of this paragraph 2 are applicable to each Prototype, Variant or Series aircraft designed and constructed in the United Kingdom by an Organisation approved by the CAA, for which an application is made for a Certificate of Airworthiness (but see 2.1.1).

2.1.1 Unless specifically notified by the CAA, the requirements are not applicable to amateur-built aeroplanes and helicopters and non-commercial gliders.

2.2 **General.** The requirements of this paragraph 2.2 are applicable to all Flight Manuals.

2.2.1 All Flight Manuals shall be identified by a unique document reference number.

2.2.2 Flight Manuals and all amendments thereto shall be subject to approval by the CAA.

2.2.3 Submissions for the initial issue or amendment of a Flight Manual shall be provided only through the medium of an Organisation approved by the CAA, although the CAA may also amend Flight Manuals when necessary.

NOTE: Where the amendment involves the copying, by agreement, of a previously approved amendment or alterations to reflect changes of relatively small significance, material may be accepted from suitable Organisations not formally approved by the CAA.

2.2.4 The Applicant for the Type Certificate or Certificate of Airworthiness, as appropriate, for the Prototype or Variant, shall prepare and submit for approval such material as is necessary to keep the Flight Manual up to date until all aircraft of the type have been permanently withdrawn from service.

a) Amendments affecting the Flight Manuals of all aircraft of the type shall be prepared and submitted only by the responsible Type Design Organisation or by the CAA. Such amendments shall, when published, take the form of replacement or additional pages.

- b) Amendments affecting the Flight Manuals of specific aircraft may be prepared either by the responsible Type Design Organisation, by another Approved Organisation, or by the CAA. Where prepared other than by the Type Design Organisation, such amendments shall, when published, take the form of Change Sheets or Supplements.

- NOTES:** (1) Amendments may arise for various reasons, e.g. from a modification to the aircraft, from the need to prevent a deterioration of the level of airworthiness, from a proposal made by the Applicant.
- (2) Unless otherwise agreed, any proposed amendment to a Flight Manual will be processed in accordance with the requirements of A6-7 or A2-5.

2.2.5 Where the aircraft is to be exported to a State which, as a condition of Type Certification, requires the Flight Manual to conform to requirements which differ from the appropriate United Kingdom requirements, the CAA shall be informed at least eight weeks before the intended date of certification. The Flight Manual material which is submitted for approval shall then comply with the requirements specified by the Responsible Authority of the State to which the aircraft is to be exported.

2.2.6 With effect from 1st December, 1980, the appropriate Type Design Organisation shall be required to make his own arrangements to publish the Flight Manual and subsequent amendments thereto, and the requirements of 2.4 shall apply. Where the Flight Manual was originally published by the CAA and there is no longer a Type Design Organisation (see A5-1, paragraphs 4 & 5) for the aircraft type, the CAA may be prepared to produce and publish amendments thereto; in which case the requirements of 2.3 shall apply.

2.3 **Flight Manuals Published by the CAA.** Where the Flight Manual was originally published by the CAA, in addition to compliance with 2.2 compliance shall also be shown with this paragraph 2.3.

2.3.1 **Approval and Publication of Amendments.** The procedure for amendment of Flight Manuals which have been published by the CAA shall be in accordance with the following:

- a) The Applicant shall supply such amendment material as is necessary to maintain compliance with 2.2.4, in accordance with 2.2.4 a) or b) as appropriate, and shall indicate to which aircraft the proposed amendments are applicable;
- b) When the CAA has completed its approval and publishing procedures, the amendment will be despatched in its final form for embodiment in the Flight Manual of every aircraft affected;

NOTE: Where an amendment is required to be embodied for safety reasons, or for other reasons of extreme urgency, the CAA will promulgate an Airworthiness Directive which may require an advanced amendment bulletin or equivalent document to be included in the Flight Manual. For the purposes of this note, see BCAR A5-1, A5-6 and A6-6.

- c) The Operator shall embody amendments in accordance with detailed procedures agreed by the CAA, and shall make available to the CAA, when so required, the relevant records and each pertinent Flight Manual.

2.3.2 **Series Aircraft.** At least three weeks before the date on which certification of a Series aircraft is desired, the Applicant shall send a statement to the CAA indicating any differences between the relevant aircraft and others of the same type previously certificated. On the basis of this information the CAA will prepare an approved Flight Manual which will be issued to the Applicant with the Certificate of Airworthiness.

When any new amendment is required to cover indicated differences, the procedure in 2.3.2 will be applied.

2.4 **Flight Manuals Published by the Applicant.** Where the Applicant has made his own arrangements to publish the Flight Manual, in addition to compliance with 2.2 compliance shall also be shown with this paragraph 2.4.

2.4.1 **General.** The CAA will, after taking account of the size and complexity of the aircraft, advise the Applicant of the CAA timetable for approving the Flight Manual.

2.4.2 **Approval and Publication of Initial Manual**

a) The material for the Flight Manual shall be produced in accordance with the appropriate requirements. For aircraft the Maximum Total Weight Authorised of which does not exceed 5700 kg, the requirements may be met by including the material in a manual of another kind; in which case the Flight Manual material shall be clearly identified and segregated.

b) A minimum of five copies of the draft Flight Manual shall be sent to the CAA for examination and approval. The CAA may, after taking account of the complexity of the aircraft and in order to meet the agreed timetable, request additional draft copies.

c) The Applicant shall incorporate any alterations which the CAA may require.

d) When the material for the Flight Manual has been approved by the CAA, three copies, in the final form (one of which will be designated the CAA authoritative master copy) shall be sent to the CAA. The CAA will advise Applicants for Certificates of Airworthiness of the Flight Manual Amendment status.

2.4.3 **Approval and Publication of Amendments.** The procedure for amendment of Flight Manuals which have been published in accordance with 2.4.2 shall be in accordance with this paragraph 2.4.3.

a) The Applicant shall produce such amendment material as is necessary to maintain compliance with 2.2.4, in accordance with 2.2.4 a) or b), as appropriate, and shall indicate to which aircraft the proposed amendments are applicable.

b) A minimum of five copies of the proposed amendments shall be sent to the CAA for approval at least three weeks in advance of the desired date for publication. The CAA may, after taking account of the complexity of the amendment and in order to meet the agreed timetable, request additional draft copies.

c) The Applicant shall make any alterations which the CAA may consider necessary at this stage.

d) When any alterations to the proposed amendments have been approved by the CAA, one copy of the amendments to be made to the Flight Manual of each particular aircraft, together with embodiment instructions, shall be sent to the owner or Operator of each aircraft affected, and the CAA shall be informed when this has been done.

e) Three copies of the approved amendments shall be supplied to the CAA for retention.

f) The Operator shall, in accordance with the instructions provided, incorporate the amendments.

NOTE: Where an amendment is required to be embodied for safety reasons, or for other reasons of extreme urgency, the CAA may classify any Advanced Amendment Bulletin or equivalent document as a Variation to the Flight Manual and promulgate

it as an Airworthiness Directive. For the purposes of this Note, see BCAR A5–6 and A6–6.

- 2.4.4 **Series Aircraft.** The CAA will advise Applicants for Certificates of Airworthiness of the Flight Manual Amendment Status. If the Flight Manual contains any material or amendment which has not previously been approved by the CAA, the procedures of 2.4.3 shall be followed. When the Flight Manual has been found satisfactory, it will be validated by the CAA.

3 **Certificate of Airworthiness Renewal**

The requirements concerning the Flight Manual at Certificate of Airworthiness renewal are prescribed in A3–4.

NOTE: In respect of an aircraft which, before renewal of the Certificate of Airworthiness, has been registered in a foreign State and is to be registered in the United Kingdom, it may be necessary to obtain a new Flight Manual, to a standard acceptable for the type, in accordance with 2.4.

Chapter A7-3 Crew Manuals

1 Introduction

Information and instructions necessary to enable the crew to acquire an understanding of the aircraft essential for its safe operation, shall be provided by the Type Design Organisation of a public transport aircraft to be granted a United Kingdom Certificate of Airworthiness. The information and instructions may form part of the Operations Manual, or may be produced as a separate document, which shall be entitled 'Crew Manual'.

NOTE: In this Chapter the word 'Manual' is used to indicate 'Crew Manual', or the information and instructions to the crew which may be part of the Operations Manual.

- 1.1 The Manual must be available for issue to a standard of completion acceptable to the CAA at the time of issue of the Certificate of Airworthiness, unless otherwise agreed by the CAA.

2 General

- 2.1 Except as otherwise agreed by the CAA the Manual shall be certified and published under the authority of the Organisation approved for design of the aircraft. The CAA reserves the right to investigate the contents of the certified Manual and to require the embodiment of any revision or amendment which it considers necessary to satisfy the requirements.
- 2.2 The Manual, when published by an approved Organisation, must bear a statement that it complies with this Chapter. Two copies of the certified manual must be given to the CAA.
- 2.3 The certification, and the NOTE associated with the certification, must appear on the title page of each Manual. The certification and the NOTE shall be worded as follows:

STATEMENT OF INITIAL CERTIFICATION

This Manual complies with British Civil Airworthiness Requirements, Section A, Chapter A7-3

Signed

Date

CAA Approval No.

NOTE: The above certification does not apply to revisions or amendments made after the date of initial certification, by other approved Organisations. Revisions or amendments made by other approved Organisations must each be separately certified and recorded on separate record sheets.

- 2.4 The aircraft Type Design Organisation shall obtain from the manufacturers of engines, auxiliary power units, propellers, radio and radar apparatus, and from the manufacturers of products which are approved under either the Accessory Procedure or the Component Procedure prescribed in Chapter A4-8, such certified information relating to their products necessary for the completion of the manual. Should the aircraft Type Design Organisation wish to depart from the information supplied, the

agreement of the original manufacturer shall be sought. The CAA shall be informed of disagreement and will adjudicate where necessary.

- 2.5 The Manual shall be adequately illustrated and include such instructions and information considered necessary to meet the requirements of this Chapter. Manuals complying with the applicable recommendations in paragraph 3 would fulfil the requirements.
- 2.6 The manual shall contain those parts specified under paragraph 3.15, headed 'Flight Planning Data', which are not part of the Flight Manual.
- 2.7 Any other instructions and information may be omitted from the manual only if the Flight Manual contains all (not parts) of the information specified under any item of a subject. In the event of any such omissions appropriate cross-references must be made to the Flight Manual.
- 2.8 The instructions and information in the Manual must be presented in a manner suitable for use by the crew, giving sufficient detail for a proper understanding of each subject, and shall be consistent with the Flight Manual, with particular emphasis on the instruments and controls in the flight crew compartment. The Manual should not contain superfluous matter regarding engineering and construction. The advice of the CAA should be sought in cases of doubt.
- 2.9 A Manual must be marked 'Provisional' on the page and in the position normally occupied by the 'Statement of Initial Certification' if it is published in parts before completion, or before the aircraft is certified and the Flight Manual is issued.

3 Format

Some, possibly all, of the contents of the Crew Manual will be repeated in an Operations Manual. There are obvious advantages, therefore, in producing the Crew Manual in a format that will permit the contents to be incorporated in an Operations Manual without being changed or rewritten. The CAA has published a document, CAP 450, 'Specifications for Operations Manuals' giving guidelines on the preparation of these Manuals. It is recommended that this document be studied before the Crew Manual is prepared and that it is produced in conformity with those guidelines.

The following information is for guidance in compiling a manual to comply with the requirements of this Chapter A7-3.

- 3.1 **Title page.** The 'Statement of Initial Certification' in accordance with paragraph 2.2.
- 3.2 **Notes to Readers.** The conventions used in the Manual (e.g. where words are in capital letters this indicates a placarded marking in the aircraft, similarly statements that all speeds given are 'indicated airspeeds') scope and purpose of the manual and list of contents.
- 3.3 **Index of Amendments (Permanent) Issued by Type Design Organisation**
- 3.4 **Index of Amendments (Temporary) Issued by Type Design Organisation**
- 3.5 **Index of Amendments (Permanent) Issued by Operator**
- 3.6 **Index of Amendments (Temporary) Issued by Operator**
- 3.7 **List of Associated Publications**
- 3.8 **Introduction.** A brief introduction to the aircraft, its structure, systems, equipment and roles, including a three-view general arrangement drawing giving dimensions and such illustrations as may be necessary to cover panel coding, bulkhead numbering and nomenclature.

- 3.9 **Flight Crew Compartment.** Lay-out, crew stations, controls, equipment, instruments and lights with appropriate illustrations.
- 3.10 **Systems and Equipment.** As appropriate: air conditioning; auto-pilot; flight systems; communications; electrical power distribution; fire protection systems including warning and extinguishing devices; flight control; fuel; hydraulic power; ice and rain protection; landing gear; navigation equipment including radio aids; instruments and radar; oxygen system including portable sets; pitot static system; fatigue meters; ice-detection, etc.; powerplant; auxiliary power units; starter pods; oil systems; emergency and survival equipment with locations and working instructions; cabin accommodation; galleys; warning lights; all of which should be covered in the following way:
- a) Description, consisting of location of main components in diagram or table form; technical description of the system or installation; system and component functioning; controls, indicators and instruments, and power (electric, hydraulic and/or pneumatic) supplies in diagrams or table form (structural information should be given only where necessary for clarity).
 - b) Management, consisting of normal conditions before flight, in flight and after flight, and abnormal conditions (i.e. malfunctioning and abnormal external conditions which do not constitute an emergency (see paragraph 3.13)).
 - c) Ground Servicing, consisting of items of system ground servicing that the crew may be required to supervise or carry out in the event of a stop where full servicing facilities are not available; location of system ground servicing points in diagram form, and system replenishing and off-loading.
- 3.11 **Limitations.** As prescribed in the Flight Manual.
- 3.12 **Handling Procedures.** General handling techniques applicable to all procedures; departure, starting, taxiing and take-off; flight handling, normal climb and cruise and flight in adverse weather, arrival, descent, field approach and landing; abnormal conditions, feathering, unfeathering, re-lighting, asymmetric flight, auto-rotation, etc., crew training, procedures outside normal operation but necessary for crew training; and ground handling, ground running and testing, ground manoeuvring, parking and mooring.
- NOTE:** Standard procedures, such as holding patterns and VOR procedures, which are considered to be part of basic piloting knowledge, may be omitted, except for those items of equipment which introduce new concepts.
- 3.13 **Emergencies.** Essential operating procedures for emergency conditions (but excluding abnormal conditions (see paragraph 3.12)). An emergency in this context is defined as a foreseeable but unusual situation in which immediate and precise action will substantially reduce the risk of a catastrophe; those steps in which immediate action is essential to safety shall be distinguished from the steps which are taken subsequently.
- 3.14 **Check Lists.** Crew check lists with transit checks where applicable.
- 3.15 **Flight Planning Data.** Example calculations and flight plans, performance, fuel and oil consumption, etc.
- 3.16 **Loading and CG Data.** Definitions, data, example calculations and typical loading examples and instructions for using the Weight and Centre-of-Gravity Schedule (Chapter A7-10) for all reasonable combinations of loading. In the case of aircraft in which provision is made for the carriage of freight, floor loading limitations and adequate information to enable the Operator to position and secure freight.

4 Review and Amendment of Manuals

4.1 The aircraft Type Design Organisation shall review certified Manuals at periods not exceeding six months and where changes have been made by them, permanent revisions or amendments shall be published.

4.1.1 The certification of permanent revisions or amendments shall be as follows:

This permanent revision/amendment complies with British Civil Airworthiness Requirements, Section A, Chapter A7-3

Signed

Date

CAA Approval No.

Two copies of each revision or amendment shall be forwarded to the CAA.

4.2 Essential information, which has to be issued in the shortest possible time, may be published by a serialised system of temporary revisions or amendments which shall be certified and printed on pages readily distinguishable from ordinary pages, and subsequently embodied in the permanent revision or amendment procedure.

4.2.1 The certification of temporary revisions or amendments shall be as follows:

This temporary revision/amendment complies with British Civil Airworthiness Requirements, Section A, Chapter A7-3

Signed

Date

CAA Approval No.

4.3 The details of the system and the manner in which amendments are to be incorporated and recorded shall be adequately explained.

4.4 Permanent revisions or amendments or temporary revisions or amendments shall be distributed by the Type Design Organisation to holders of the Manual, together with the necessary instructions for embodiment and recording in the Manual. Each Manual shall contain a statement which will indicate that the changing of data by uncertified revisions or amendments or temporary revisions invalidates the initial certification of the manual relative to the part revised. The statement shall appear on the revision or amendment sheet in the following form:

The introduction of data by revision or amendments or temporary revisions or amendments not certified in accordance with British Civil Airworthiness Requirements, Section A, Chapter A7-3 will invalidate the initial certification on the title page of the manual relative to the part revised. Revisions or amendments, or temporary revisions or amendments embodied in this manual which have been certified by an appropriately Approved Organisation, other than that applicable to the initial certification, must be recorded on separate record sheets.

4.5 Operators with appropriate approval may amend Manuals without reference to the Type Design Organisation, provided that the technical substance of the change is within the terms of their approval. In this case the Operator shall proceed as follows:

- a) Prepare a temporary or permanent revision or amendment in compliance with this Chapter;
- b) Provide the CAA with a copy;
- c) Incorporate the revision or amendment in the manuals and record the embodiment in a revision or amendment record, which is separate from that provided by the Type Design Organisation.

NOTE: Where Operators wish to amend manuals, co-operation with the Type Design Organisation is recommended. This also applies where amendments to manuals are necessary due to the incorporation of Minor Modifications under the Form AD 261 procedure (see Chapter A2-5).

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Chapter A7-4 Maintenance, Overhaul and Repair Manuals

Introduction

Manuals containing information and recommendations necessary for the maintenance, overhaul and repair of aircraft, including engines and auxiliary power units, propellers, components, accessories, equipment, instruments, electrical and radio apparatus and their associated systems, and radio station fixed fittings, shall be provided by the manufacturer as required by Chapter A5-3. This Chapter A7-4 is to provide guidance in the compilation of such Manuals.

1 Aircraft Maintenance Manual

This should include the information described in paragraphs 1.1 to 1.11.

- 1.1 **Introduction.** A brief survey of the aircraft features and data of general interest.
- 1.2 **Description.** The construction of the aircraft including its control surfaces, landing gear, flying control systems and all other systems, e.g. hydraulic, pneumatic, vacuum and de-icing; all installations, e.g. engine, auxiliary power unit, propeller, instrument, electrical, and radio station fixed fittings and all equipment installations, e.g. lifebelts, dinghies, fire detection and prevention. Where necessary, the purpose of individual parts should be described.
- 1.3 **Operation.** The method whereby the components, systems and installations achieve their designed purpose.
- 1.4 **Control.** The method of operating the components, systems and installations together with any special procedures and limitations.
- 1.5 **Servicing.** Details regarding servicing points, capacities of tanks, reservoirs, etc., types of fluid to be used, with details of any anti-corrosive measures to be taken, pressures applicable to the various systems, position of access or inspection panels, walkways and drain locations, lubrication points and the lubricants to be used. Details of servicing equipment, ground handling details such as taxiing, towing, parking, mooring, jacking and levelling, and loading data including loading limitations. Details of ground de-icing fluids and other fluids where contamination could cause a dangerous deterioration in airworthiness.

NOTE: Suitable de-icing and cleaning fluids which are approved for use by the aircraft manufacturer may be listed, together with information concerning the means to counteract any detrimental action which might result from their use.
- 1.5.1 Procedures for the ground de-icing and anti-icing of aircraft should be included in the Maintenance Manual or in a separate document referred to in the Maintenance Manual.
- 1.6 **Maintenance**
 - 1.6.1 **Schedule.** The recommended periods at which each part of the aircraft, engine, auxiliary power units, propellers, the accessories, instruments and equipment, should be cleaned, inspected, adjusted, tested and lubricated, and the degree of inspection recommended at the periods quoted. The recommended periods at which components and accessories should be overhauled, the Mandatory Life Limitations identified in Chapter A5-3, paragraph 4.1, and a cross-reference to the section of the Overhaul Manual which lists the Mandatory Life Limitations of engine or propeller parts. A procedure for converting flying hours or landings, as applicable, into life units

(e.g. cycles) together with the assumptions made with regard to the 'typical cycle' on which the lives are based.

- 1.6.2 **Procedures.** The methods to be used for implementing the recommended schedule, e.g. methods of access to specified parts, methods of inspection, including those of carrying out duplicate inspections of vital points control systems (see Chapter A5-3).
- 1.6.3 **Faults and Rectification.** The faults which may arise during service or those which may be found as a result of inspection, together with suggested causes and recommended methods of rectification.
- 1.6.4 **Adjustments and Testing.** The methods of completing the adjustments or tests which may be required during service or to correct faults, e.g. control movements with permissible tolerances.
- 1.7 **Removal and Assembly.** The order and method of removing and refitting components and accessories, together with details of any special precautions to be observed.
- 1.8 **Line Repairs.** Repairs of a temporary or minor nature which, in the opinion of the manufacturer, could be applied to the aircraft whilst remote from suitable facilities.
- 1.9 **General Procedures.** The method of applying general procedures such as system testing during ground running, checks after a heavy landing, change of role, symmetry checks, weighing and determination of centre-of-gravity and salvage considerations, such as lifting and shoring.
- 1.10 Details of crating and unpacking of components, as considered necessary; conditions of storage, with recommended limiting periods, and component dimensions and weights.
- 1.11 **Compliance.** The manner of complying with the above should be such that it is primarily directed to those persons who will be responsible for maintaining a complete aircraft in a state of airworthiness.

NOTE: The aircraft Maintenance Manual should not contain data relating to the complete overhaul of a component.

2 Aircraft Overhaul Manual

This should include the information described in paragraphs 2.1 to 2.5.

- 2.1 **Aircraft Structures and Control Surfaces.** The extent of overhaul data for structures including control surfaces should be such as to ensure that owners and Operators are made aware at an early stage of the recommended standard of overhaul required initially to ensure the continued airworthiness of the structures including control surfaces over a stated period of hours flying and/or elapsed calendar time, or at the termination of a specified number of flights and/or landings. Subsequent amendments should be made as necessary to acquaint owners and Operators of the latest findings or experience so that the manual reflects current knowledge of the aircraft thereby enabling increases or decreases, as appropriate, to be made in the recommended periods.
- 2.2 **Integrity of Structures.** Information, as detailed below, should be provided initially for the main aircraft structures.
 - 2.2.1 Illustrations which show clearly the construction of the structures, with descriptive text to clarify the illustrations and draw attention to those parts which require detailed attention during overhaul.

- 2.2.2 Diagrams showing those parts of the structure to which access cannot be gained through the normal inspection doors and panels, the diagrams being supplemented by a table defining the limits of inaccessibility.
- 2.2.3 Diagrams showing structures classified as primary and secondary.
- 2.2.4 Table showing the recommended limiting periods at which designated parts of the structure should be overhauled in compliance with the standards given in the following paragraphs.
- 2.2.5 Information giving the methods and the extent of dismantling necessary to gain access to normally inaccessible structure, e.g. whether by removal of skin, by provision of additional panels, removal of fuel tanks, etc., and detailing any special opportunities of gaining access to normally inaccessible structure, e.g. during any component change programme.
- 2.2.6 A tabulated schedule of overhaul, relating to paragraphs 2.2.2 and 2.2.4, which defines the overhaul work and inspections and tests necessary after the normally inaccessible structure has been reached, and the method of implementing the schedule.
- 2.2.7 Details on the application of special inspection techniques, e.g. radiographic and ultrasonic testing, with a proven technique of examination where such processes are required. The limitations of such processes and limits of their applicability should be clearly defined. Any special techniques necessary for proving the serviceability of castings, forgings, tubular members, etc., should be given.
- 2.2.8 Details of the protective treatment to be used to restore the original standard of protection, the final inspection of the structure or control surfaces, and the methods of closing structure which has been opened.
- 2.2.9 Details regarding the correlation of the bolt/joint overhaul programme (see paragraph 2.3.1) with the prescribed sampling programme, and the necessity to overhaul accessories and equipment in normally inaccessible structure at the structure overhaul periods.
- 2.3 **Integrity of Attachments and Joint Assemblies**
- 2.3.1 Diagrams showing the positions of bolt and stud holes in spar booms and other primary structure, and in such secondary structure where, if failure occurs the associated primary structure may be affected. The diagrams should be annotated or marked to show the bolt or stud holes which are accessible and those normally inaccessible; the size of the holes and whether bushed; the materials forming the mating surfaces; fits and clearances and dimensional limits and a reference to identify the holes.
- 2.3.2 Using the reference identifying the holes, tables giving the total number of holes, recommended number of bolts or studs to be withdrawn from each group for Operators having fleets of 2, 5, 10 and 20 aircraft, recommended number of bushes to be withdrawn, and recommended number of hours flying, flights, landings and/or the elapsed time at which bolts, studs or bushes should be withdrawn, having regard to the possibility of fatigue, fretting and corrosion.
- NOTE:** Where an arrangement has been made between Operators by the manufacturers for a shared programme of bolt and hole sampling, it is recommended that details of the programme be provided in Service Bulletins, etc.
- 2.3.3 Details of the methods and extent of dismantling necessary to gain access to the nominated bolts or studs where this differs from paragraph 2.2.5.
- 2.3.4 Details of the precautions necessary during the removal of bolts or studs, special tools or equipment necessary, the recommended inspection and crack detection procedure, e.g. penetrant or fluorescent dyes, special optical instruments, etc.,

salvage methods and limitations, schedule of oversize bolts, studs, and bushes available, protective treatment, methods of re-assembly and locking, including torque loading data, and details of recording schemes to identify the bolts, studs or holes examined.

- 2.4 **Mandatory Life Limitations.** A Schedule detailing those parts of the aircraft and the aircraft structure which are to be replaced by new parts and the mandatory periods of renewal.
- 2.5 **Aircraft Systems.** Details of recommended overhaul practices of aircraft systems such as flying controls, hydraulic and electrical installations.

3 Aircraft Repair Manual

3.1 This Manual should be confined to a description of the repairs applicable to the aircraft structure and components, and to those parts of the systems and installations which are the design responsibility of the aircraft manufacturer, and should include the information described in paragraphs 3.2 to 3.11.

3.2 **Introduction.** General notes on the contents and usage of the manual.

3.3 **General Information.** Details of recommended repair procedures and practices which have a general application, with diagrams showing:

- a) Structures classified as primary and secondary with areas or parts where repairs are not permissible clearly defined;
- b) The construction of main structures and components with station positions which define the extent of skin panels, and the construction of primary longitudinals, frames, stringers and ribs, with details of the dimensions and materials used;
- c) Tables of standard and special extruded sections with, where applicable, approved alternatives;
- d) Tables of fasteners for each part of the structure, with information on the areas where oversize fasteners may be used.

3.3.1 Details of process specifications, heat treatment procedures, protective treatment requirements, precautions necessary during repairs, e.g. damage by drilling into hidden structures and building in assembly stresses, details of special processes such as metal-to-metal bonding, welding, sealing of pressurised structures, etc.

3.4 **Preparation for Repair.** Details of, for example, the inspection necessary before repair, damage assessment standards, methods of supporting the structure, alignment and geometry checks, material allowance for dressing of damage, and limits of wear.

3.5 **Tools and Equipment.** A list of tools and equipment necessary for applying repairs, with details of their purpose and method of use.

3.6 **Temporary Repairs.** Details of repairs of a temporary nature which would permit the aircraft to return to base for a permanent repair.

3.7 **Standard Repairs.** Details of repairs which can, within defined limits, be applied as applicable, to various structures, systems and installations.

3.8 **Minor Repairs.** Details of permanent repairs which apply only to specified parts of the structure or particular components. Each part of the aircraft structure, its systems and installations should be considered, the sub-divisions of this section following the same sequence as that used in the Maintenance Manual. Only minor repairs, which

do not require extensive dismantling or the use of special jigs or equipment, should be included.

- 3.9 **Major Repairs.** Details of permanent repairs which would normally only be completed at the main base, e.g. those which would require the use of special jigs and equipment.
- 3.10 **Checking and Testing after Repair.** Details of those checks or tests necessary after repair, e.g. structure alignment checks, adjustment of control surface balance and fuselage pressure testing.
- 3.11 **General.** The repair schemes specified in paragraphs 3.6 to 3.9 should, as far as possible, be diagrammatically presented with the text adjacent, giving details of negligible damage, the limits of repairable damage, the applicability of the particular repair and the procedure involved in its embodiment.

4 Engine and Auxiliary Power Unit Manuals

Engine and Auxiliary Power Unit Manuals should contain the following descriptive, servicing, maintenance and overhaul data relating to the engine, and similar data relating to those components and accessories either on the engine or in the power unit, in respect of which an application for design approval has been made by the engine manufacturer. Such data should conform to the recommendations of paragraph 6.

4.1 Engine and Auxiliary Power Unit Maintenance Manuals

- 4.1.1 **Introduction.** A brief description of the engine and engine systems.
- 4.1.2 **Description.** A detailed description of the construction of the engine, including the systems and, where necessary, the purpose of the individual parts. For modular engines, details of the division of the engine into modules (see JAR-E Section C, Chapter C1-2 for definition) giving the nomenclature and clearly defining the boundaries for each module.
- 4.1.3 **Operation.** The method whereby the components, systems and installations achieve their design purpose.
- 4.1.4 **Installation.** Methods of uncrating, acceptance checking, de-inhibiting, lifting, and installing an engine into a power unit, the method of attaching accessories to an engine or power unit, and the checks necessary after such installation.
- 4.1.5 **Control.** Methods of starting, running, testing and stopping the engine and its components, systems and installations, with any special procedures and limitations.
- 4.1.6 **Servicing.** Details regarding servicing procedures, capacities of tanks, reservoirs, etc., types of fluid to be used, and the draining of collector tanks.
- 4.1.7 **Maintenance**
- a) **Schedule and Procedures.** Compliance with the recommendations in paragraphs 1.6.1 and 1.6.2.
 - b) **Faults and Rectification.** Compliance with the recommendations in paragraph 1.6.3, together with inspections necessary after abnormal circumstances, such as shock loading, sudden stoppage, excessive out of balance, fire, over-speed, over-temperature, or any other excursions outside approved limitations.
 - c) **Adjustments, Component Removals and Testing.** The method of completing those adjustments, tests or removal of components, e.g. cylinders or combustion chambers, which may be required during service or to correct faults.

- d) **Modular Engines.** In respect of modular engines, in addition to a), b) and c):
- i) In carrying out a module change, the means of checking the serviceability of the other modules fitted to the engine (e.g. establishing that they have not been adversely affected by blade damage, oil contamination, internal air system contamination);
 - ii) The compatible modification standards for the interchange of modules;
 - iii) Details of the methods, tests and equipment by means of which adequate engine performance, functioning and mechanical integrity (e.g. freedom from leaks, oil consumption, oil pressure, run down time) may be established following a module change on an installed engine.
- 4.1.8 **Removal.** The order and method of removing the engine from a power unit, and the removal of accessories from either the engine or the power unit, with the methods of engine lifting, inhibiting and crating for return to manufacturer or base.
- 4.1.9 **Tools and Equipment.** Tools and equipment necessary for maintenance with details of their purpose and method of use.
- 4.1.10 **Mandatory Life Limitations.** A procedure for converting flying hours, or landings, as applicable, into life units (e.g. cycles) together with the assumptions made with regard to the 'typical cycle' on which the lives are based.
- 4.2 **Engine and Auxiliary Power Unit Overhaul Manuals**
- 4.2.1 **Tools and Equipment.** Tools and equipment necessary for overhaul and testing, with details of their purpose and method of use.
- 4.2.2 **Dismantling.** The order and method of dismantling for overhaul.
- 4.2.3 **Cleaning and Inspection.** The materials, equipment and methods to be used for cleaning. The materials and equipment to be used, and the standards and methods of inspection to be applied, during overhaul, and also after abnormal circumstances such as shock loading, sudden stoppage, excessive out of balance, fire, overspeed, over-temperature or any other excursions outside approved limitations.
- 4.2.4 **Fits and Clearances.** Details of all relevant fits and clearances.
- 4.2.5 **Repair and Salvage Schemes.** Details of all applicable repair and salvage schemes.
- 4.2.6 **Re-assembly.** Description of the order and method of assembly at overhaul.
- 4.2.7 **Testing.** Details of the standards to be observed, the method of completing tests, and a list of faults which may occur during testing, together with possible causes and methods of rectification.
- 4.2.8 **Storage Conditions and Limiting Period.** Details of the conditions of storage and the recommended limiting storage periods.
- 4.2.9 **Mandatory Life Limitations.** A list of the relevant parts, with details of the Mandatory Life Limitations, with a cross reference to the Maintenance Manual for the procedure for converting flying hours or landings, as applicable, into life units (e.g. cycles) together with the assumptions made with regard to the 'typical cycle' on which the lives are based.

5 Propeller Manuals

Propeller Manuals should contain descriptive, servicing maintenance and overhaul data relating to the propeller and similar data relating to those accessories concerned with the functioning and control of the propeller in respect of which an application for

design approval has been made, as outlined in 5.1 and 5.2; such accessory data should conform to the recommendations of 6.

5.1 **Propeller Maintenance Manual**

5.1.1 **Introduction.** A brief description of the propeller and propeller systems.

5.1.2 **Description.** A detailed description of the construction of the propeller.

5.1.3 **Operation.** The method whereby the propeller and the propeller systems achieve their designed purpose.

5.1.4 **Installation.** The method of uncrating, acceptance checking, lifting and installing the propeller.

5.1.5 **Control.** The method of checking the operation of the propeller during engine running, with details of any special procedures and limitations.

5.1.6 **Maintenance**

a) **Schedule and Procedures.** Compliance with the recommendations in 1.6.1 and 1.6.2.

b) **Faults and Rectification.** Compliance with the recommendations in 1.6.3.

c) **Adjustments.** The methods of completing those adjustments which are necessary during service or to correct faults.

5.1.7 **Removal.** The order and method of removing the propeller from the engine.

5.1.8 **Mandatory Life Limitations.** A procedure for converting flying hours or landings, as applicable, into life units (e.g. cycles) together with the assumptions made with regard to the 'typical cycle' on which the lives are based.

5.2 **Propeller Overhaul Manual.** Compliance to the standards recommended in 4.2.

6 **Accessory, Instrument and Electrical Equipment Manuals**

Separate manuals should normally be provided by the accessory, instrument or equipment manufacturer for a) Maintenance and b) Overhaul, the manuals containing data which conforms to the standard indicated by the subjects detailed below, where applicable.

6.1 **Maintenance Manuals**

6.1.1 **Description, Operation and Data**

Description

Operation

Data

6.1.2 **Unpacking**

6.1.3 **Acceptance Checks**

6.1.4 **Storage Instructions**

Conditions

Limiting Periods (recommended)

- 6.1.5 **Checks/Tests Before Installation**
- 6.1.6 **Installation**
- 6.1.7 **Checks/Tests After Installation**
- 6.1.8 **Operation Instructions**
- 6.1.9 **Maintenance Schedule.** To include recommendations in respect of overhaul periods and/or Mandatory Life Limitations, as appropriate.
NOTE: In certain circumstances life limitations may become mandatory; in such cases these must be indicated.
- 6.1.10 **Trouble Shooting Procedures**
- 6.1.11 **Removal**
- 6.1.12 **Bench Checks**
- 6.1.13 **Return to Manufacturer or Base**
- 6.2 **Overhaul Manuals**
 - 6.2.1 **Description, Operation and Data**
 - Description
 - Operation
 - Data
 - 6.2.2 **Disassembly.** To include any checks or tests considered necessary before disassembly, and a list of items which are to be discarded and replaced by new parts at overhaul.
 - 6.2.3 **Cleaning**
 - 6.2.4 **Inspection/Check**
 - 6.2.5 **Repair**
 - 6.2.6 **Assembly**
 - 6.2.7 **Fits and Clearances**
 - 6.2.8 **Testing**
 - 6.2.9 **Trouble Shooting Procedures**
 - 6.2.10 **Storage Instructions**
 - Conditions
 - Limiting Periods (recommended)
 - 6.2.11 **Special Tools, Fixtures and Equipment**

7 Replacement Parts

- 7.1 Unless Manuals include detailed part identification of all replacement parts appropriate to the work described in the Manual, a statement should be included in each appropriate Manual specifying the documents which identify these parts.
 - 7.1.1 Each Manual should also contain a statement that all replacement parts must be either those parts detailed in the manufacturers' publications or documents, or approved alternative parts.

Appendix 1 to A7-4 Automatic Test Equipment Software

1 Introduction

- 1.1 The requirements of this Appendix are applicable to any Automatic Test Equipment (ATE) Software, which is essential to the use of ATE in testing a specific airborne equipment, where the ATE Software is provided as an alternative to, or in place of, conventional test procedures in Maintenance, Overhaul or Repair Manuals. The requirements do not apply to either ATE Software used by a manufacturer as part of the process leading to certification of a new product or test equipment which is an integral part of airborne equipment (built-in test equipment – BITE).

2 Definitions

- 2.1 **ATE Software Design Control Authority.** The ATE Software Design Control Authority is the original producer of ATE software or, if the software has been revised, the organisation certifying the revisions.
- 2.2 **Data Processing Terms.** The terms used in this Appendix are in accordance with British Standard BS 3527, Glossary of Terms used in Data Processing.

3 General

- 3.1 Except as otherwise agreed by the CAA, software produced in accordance with this Appendix shall be certified and published under the authority of an appropriately approved Organisation and shall relate accurately to the design and production standard of both the specific airborne equipment to be tested and the ATE itself. In particular, programs shall be allocated a coding or part number which can be directly related to the build standards of both the ATE and the unit under test (UUT). Failing adequate protection being provided within the ATE, object program content shall include protection against unauthorised editing.
- 3.2 The CAA reserves the right to require the reassessment of the content of any certified software and to require the embodiment of any revision or amendment which is considered necessary to satisfy the requirements of 3, 4, 5, and 6.
- 3.3 Software, produced by an Approved Organisation, must be associated with a statement that it complies with the requirements of this Appendix.
- 3.4 Software, when used with the automatic test equipment to which it relates, shall be such as to ensure that all specified tests of the specific airborne equipment are either completed satisfactorily or result in an unambiguous indication to the contrary.
- 3.5 The certification shall be worded as follows and must appear on the relevant record sheet:

STATEMENT OF INITIAL CERTIFICATION

The software identified complies with BCAR Section A Chapter A7-4, Appendix No: 1.

Signed

Date

CAA Approval No:

NOTE: The above certification does not apply to revisions or amendments made by other approved Organisations after the date of initial certification. Revisions or amendments made by other approved Organisations must each be separately certified. Suitable records shall be maintained of all revisions or amendments (whether temporary or permanent) to ATE software.

4 Software Related to the Testing of Specific Airborne Equipment

The following information is for guidance in preparing Automatic Test Equipment (ATE) software to comply with the requirements of this Appendix. It is biased towards systems which are computer controlled but the principle can also be applied to sequential tape controlled equipment.

- 4.1 The software should normally consist of three main parts, together with associated record and control documentation, as follows:
- a) A test specification in plain English or the Abbreviated Test Language for Avionic Systems (ATLAS) which will normally be that contained in the Overhaul Manual for the airborne equipment under test.
 - b) A test sequence in a test program format suitable for the particular automatic test equipment (SOURCE PROGRAM).
 - c) A test sequence in the media (e.g. magnetic disc, tape) used to control the particular automatic test equipment (OBJECT PROGRAM).
- 4.2 Each of the above parts should separately be subject to issue control and modification procedure.
- 4.3 Programs should be specified in a manner which satisfies the requirements of 4.1 a), having due regard to the characteristics of the equipment under test and taking account of the inherent limitations of the automatic test equipment. Particular attention should be paid to ensure that programs do not lead to circumstances which induce incipient damage into the equipment under test.
- 4.4 All programs should be fully debugged and validated prior to certification.

5 Software Related to Specific Automatic Test Equipment

- 5.1 All software, e.g. assemblers, compilers, self test programs, should be fully documented, debugged and validated prior to certification.

6 Review and Amendment of Software

- 6.1 Certified software shall be reviewed by the ATE software design control authority at periods not exceeding six months and where changes have been made affecting the validity of the software, permanent revisions or amendments shall be published.
- 6.1.1 The certification of permanent revisions or amendments shall be as follows:

STATEMENT OF REVISION/AMENDMENT

Software Identification

This permanent revision/amendment complies with British Civil Airworthiness Requirements, Section A, Chapter A7-4.

Signed

Date

CAA Approval No:

- 6.2 Operators with appropriate approval may amend ATE software without reference to the originating ATE software design control authority, provided that the amendment of ATE software is within the terms of their CAA Approval. However, co-operation with the appropriate airborne equipment manufacturer should normally be undertaken in order to ensure that ATE software adequately meets the test requirement of the UUT. Any Operator undertaking amendment of ATE software shall proceed as follows:
- Prepare a revision or amendment in compliance with this Chapter A7-4;
 - Incorporate the revision or amendment in the program and retain an appropriate record of the details of the amendment. The record can be in any convenient form, e.g. log book, record sheets or retention of pre-revision tapes for comparison.

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Chapter A7-5 Approval of Maintenance Programmes and Schedules

1 Introduction

- 1.1 **Applicability.** The requirements of this Chapter A7-5 are applicable to Maintenance Schedules and Maintenance Programmes (hereinafter referred to as the 'Schedule' and the 'Programme') submitted for Approval as required by the Air Navigation Order (Maintenance Schedule) or JAR OPS 1/3 (Maintenance Programme).
- 1.2 **Purpose.** This Chapter A7-5 provides an Applicant intending to gain CAA Approval of a Schedule or Programme, or amendments thereto, with:
- a) procedures to follow when seeking to gain CAA Approval of a Schedule or Programme;
 - b) procedures for the control and Approval of amendments to Schedules or Programmes.
- 1.3 **Approval.** When satisfied with the content of the Schedule or Programme, the CAA will signify this Approval by issuing a CAA Approval Document AD 271 to the Applicant.

- NOTES:** (1) It is not intended that the Type Certificate (TC) Holder should also submit the maintenance inspection programme required by A5-3 or the JAR 25/23 codes for Approval in accordance with this procedure. A6-2 lists the minimum content of the Schedule or Programme and a TC Holder may use that list as guidance for the acceptable content of the Scheduled Inspection Programme submitted as part of the Type Certification procedure. Such Programmes are not specifically Approved by the CAA, but they are accepted when considered satisfactory by the Authority issuing the Type Certificate as part of the procedure leading to the issue of the Type Certificate (or Certificate of Airworthiness when required).
- (2) The content of a Programme submitted to comply with JAR OPS 1/3 will be found in JAR OPS 1/3, Appendix 1 to AMC OPS 1.910(a) & (b).

2 Maintenance Schedule Approval Procedures

2.1 Procedure 1 – Maintenance Schedule Approval (non-JAR OPS)

- 2.1.1 To comply with the Air Navigation Order, aircraft with a Certificate of Airworthiness in the Transport Category (Passenger), Transport Category (Cargo), Aerial Work, or Private Category, the Applicant shall submit for approval a Maintenance Schedule and, where applicable, all of the associated procedures intended to ensure that the airworthiness of the aircraft will be preserved on a continuing basis. These procedures shall, as a minimum, ensure a review of the effectiveness of the Schedule on a continuing basis. Schedules shall be submitted and Approved in accordance with this paragraph 2.1.
- 2.1.2 Normally the CAA expects that all Schedules will be based upon the TC Holder's recommendations. The Schedule may use the traditional processes of inspection, servicing, and replacement/overhaul at stated periods, or such processes may be

combined with other processes which permit the adjustment of the work content and periods in accordance with information derived from the operation and maintenance of the aircraft concerned.

- 2.1.3 Notwithstanding 2.1.2 it may be possible for the Operator to develop or escalate the TC Holder's Programme in accordance with procedures Approved by the CAA (see 3.1 below).

NOTE: Where it is proposed that such maintenance processes be monitored by a statistical reliability procedure of a condition monitored (see CAP 418 Condition Monitoring Maintenance: an Explanatory Handbook) or reliability centred Maintenance Programme, such a procedure will need the Approval of the CAA, and will be deemed part of the Schedule (see A6-2 Appendix).

- 2.1.4 Where Maintenance Review Board (MRB) procedures are applicable to the Type Certification of a particular type, then these procedures will be applied as stated in A5-2 or JAR-145 as applicable. (See Note 1).

NOTES: (1) Guidance on the MRB report content and on MRB procedures are contained in A5-2 and JAA Administrative and Guidance Material Section 2 Part 2 Chapter 16 as appropriate.

(2) Where TC Holder's maintenance planning data developed from an MRB is used, this should be clearly identified in the schedule.

(3) Certification Maintenance Requirements (CMR) may arise as a result of the System Safety Assessment necessary for compliance with JAR (FAR) 25.1309. The associated tasks should be clearly identified as being separate from MRB tasks. (See also paragraph 3.1.4).

- 2.1.5 **Application.** Application for Approval of the Schedule shall be made in the first instance to the CAA Safety Regulation Group, Applications and Certification Section, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR, using CAA form AD981B. A CAA Maintenance Schedule Approval Reference number will be allocated by the CAA and the Applicant will be advised of the CAA Safety Regulation Group Regional Office responsible for the investigation and grant of Approval of the Maintenance Schedule. Amendments to Schedules shall be submitted directly to the Regional Office responsible for the Approval of the Schedule. Two copies each of the Schedule or amendment, and any other documents or procedures, required in a particular case, shall be forwarded by the Applicant to the CAA Safety Regulation Group (SRG) Regional Office as advised.

- 2.1.6 For aircraft with a Certificate of Airworthiness in the Transport (Passenger or Cargo) category operated for the purpose of Public Transport, prior to the implementation date of JAR-OPS, or an aircraft with a Certificate of Airworthiness in the Aerial work category, the Operator shall complete and submit a copy of Standard Maintenance Practice (SMP) 9 (see CAP 562, CAAIP Part 14) along with the Schedule to the CAA SRG Regional Office as advised.

- 2.1.7 For aircraft with a Certificate of Airworthiness in the Transport (Passenger or Cargo) or Private Category, not used for the purpose of Commercial Air Transport, the Operator shall complete and submit a copy of SMP 19 (see CAP 562, CAAIP Part.14) together with a copy of the applicable Type Certificate Holder's recommended maintenance scheduling data, to the advised CAA SRG Regional Office, for Approval. If the Applicant chooses to submit a Schedule that is an alternative to that recommended by the TC Holder, then the Applicant must demonstrate that the proposed alternative will result in an equivalent level of safety. This alternative may result in a detailed assessment by the CAA.

NOTE: An Applicant wishing to make an application for the Approval of a Maintenance Schedule in accordance with paragraph 2.1.7 alternative to that recommended by the TC Holder, shall pay a charge for assessment and Approval.

2.1.8 The Applicant shall nominate a person (keeper or controller) who shall be responsible for the upkeep or control of the Schedule, including ensuring that the Schedule is suitably amended where applicable following the regular review (see also CAP 360, Part 2 Chapter 4 paragraph 2.2).

2.2 **Procedure 2 – Maintenance Programme Approval (JAR–OPS)**

2.2.1 For aircraft operated for the purpose of Commercial Air Transport in accordance with JAR–OPS, the Applicant shall submit for Approval a Programme in accordance with JAR–OPS Subpart M, and complete SMP 20 or SMP 21 as applicable (see CAP 562, CAAIP Part 14). Programmes shall be submitted for Approval in accordance with this paragraph 2.2.

2.2.2 Application for Approval of the Programme shall be made using CAA Form AD981A addressed to CAA SRG Applications and Certification Section, 1E Aviation House, Gatwick Airport South, West Sussex, RH6 0YR. The CAA will allocate a Maintenance Programme Approval reference number and advise the Applicant of the CAA SRG Regional Office responsible for the Approval of the Programme. Two copies of the Programme (or amendment), together with any applicable substantiating data shall be submitted by the Applicant to the CAA SRG Regional Office as advised.

2.2.3 The Applicant shall nominate a person (keeper or controller) who shall be responsible for the upkeep or control of the Programme including ensuring that the Programme is suitably amended where applicable following the regular review (see also JAR–OPS AMC OPS 1.910(b) 3.2).

3 **General**

3.1 **Amendments to Approved Schedules and Programmes**

3.1.1 Amendments to Approved Schedules or Programmes may only be Approved when the CAA is satisfied with the content or when the Approval is obtained in accordance with CAA Approved procedures (see paragraph 3.1.2). The data in an Approved Schedule or Programme shall, where appropriate, be amended by the Operator to reflect the embodiment of mandatory and non-mandatory modifications and inspections, the incorporation of manufacturers requirements (bulletins, etc.), and the effects of maintenance experience. Amendments shall not be incorporated without the Approval of the CAA, unless an alternative method of approving such amendments has been accepted by the CAA.

3.1.2 An Organisation may be Approved to provide reports and certify that the content of a Schedule or Programme amendment complies with the appropriate requirements, when the Organisation complies with the procedures set out in Supplement No. 1 to this Chapter. In such cases the Approval of the amendment may take place in accordance with the Organisation's Approved procedures.

3.1.3 Amendments required by the CAA shall be incorporated in the Approved Schedule or Programme.

3.1.4 For aircraft types where CMR tasks are identified as part of the TC process, these tasks are subject to separate procedures for escalation: (JAR–25, AMJ 25–19 should be referred to for guidance).

3.2 **Applicability to Individual Aircraft.** The Schedule or Programme submitted to the CAA for Approval, must contain a list of the registration marks of the aircraft intended

to be maintained in accordance with the Schedule or Programme, (see A6-2, 3.2 a) or JAR-OPS 1/3.910 AMC, Appendix A Paragraph 1.1.1): changes to the list of aircraft constitute an amendment to the Schedule or Programme and as such requires the Approval of the CAA. The introduction of aircraft to the Schedule or Programme, will also require an assessment by the Applicant, of those (that) aircrafts' maintenance records, to determine what work must be carried out to align the aircraft concerned with the Schedule or Programme. The agreement of the CAA should be sought for the content of this alignment check when such amendments are anticipated.

3.3 **Maintenance Schedule and Maintenance Programme Review Procedures**

- 3.3.1 The Applicant shall submit for Approval to the CAA, procedures to ensure that the Schedule or Programme is reviewed for effectiveness on a regular basis (see in particular JAR-OPS Subpart M, AMC OPS 1/3.910(b), 3.2 and CAP 360 Air Operators Certificate, Part 2: Arrangements for Maintenance Support, 4.2.5) with the review carried out, as a minimum, once in every 12 months. When the effectiveness of the Programme or Schedule falls below the established criteria, the Programme or Schedule shall be amended as necessary to take into account the findings of such reviews.
- 3.3.2 The review procedures may include the Operator's escalation procedures which ensures that the Schedule or Programme is developed to reflect current operating experience and the TC holder's recommendations.
- 3.3.3 All procedures intended to meet the intent of this paragraph 3.3 shall be submitted to the CAA for Approval.

3.4 **Maintenance Task Card and Maintenance Instruction Development Procedures**

- 3.4.1 The Applicant may choose to develop Task Cards or Maintenance Instructions from the Schedule or Programme for ease of interpretation. These Task Cards or Instructions shall be developed using procedures Approved by the CAA. It is important that the content of the Task Cards or Instructions accurately reflects the content of the Approved Schedule/Programme and the content of the aircraft maintenance manual. Task Cards and Maintenance Instructions must be revised to reflect revisions to source documents. There shall be a continuing audit of the effectiveness and applicability of these cards or instructions and the associated development procedures.
- 3.4.2 Task Cards may additionally be developed by the Applicant for non-scheduled or non-routine tasks. The procedures used to develop these non-routine cards shall be submitted for Approval in accordance with paragraph 3.4.1 above.
- 3.4.3 Where Maintenance Tasks or Maintenance Manual procedures are broken down into discrete maintenance steps or maintenance instructions, in particular for complex tasks, then the procedures used to develop these instructions shall be Approved in accordance with 3.4.1 above.
- 3.4.4 All Task Cards and any associated Maintenance Instructions shall be separately identified and be controlled by a revision identification system. Each task or instruction should clearly cross refer to the relevant Schedule or Programme task or Maintenance Manual reference as applicable.
- 3.5 **CAA Requirements.** Schedules or Programmes and all associated airworthiness data, including that data used for the substantiation of escalation programmes (in particular where alternative procedures in accordance with paragraph 3.1.2 above are employed) shall be made available to the CAA upon request.

Supplement 1 to A7-5 Organisation Approval for the Approval of Maintenance Schedule or Programme Amendments

1 Introduction

This Supplement does not replace the applicable operating requirements. This Supplement defines the requirement for Applicants wishing to obtain CAA Organisation Approval for the control of Schedule or Programme amendments. Appendix No.1 to this Chapter A7-5 sets out minimum content required when submitting Schedules or Programmes and their associated amendment procedures for approval to the CAA in such cases.

2 Organisation

- 2.1 The Organisation shall demonstrate to the satisfaction of the CAA that it has competence, and has in place procedures (see paragraph 3 of this Supplement) and record keeping provisions which will enable the Organisation to analyse aircraft reliability, TC Holder's instructions, and other related operating and maintenance criteria, to generate sound and logical proposals for changes to Schedules or Programmes. To this end, the Organisation shall:
- a) be the holder of an AOC, or JAR-145 Approval, valid or rated for the type of aircraft for which the Schedule or Programme is intended;
 - b) meet the requirement of this Supplement.
- 2.2 In addition to the respective requirement (JAR-OPS, CAP 360, or JAR-145) the Organisation must satisfy the CAA that it has adequate manpower resources and facilities to enable it to fulfil the intended role in relation to this Supplement.
- 2.3 A senior person or group of persons acceptable to the CAA, whose responsibilities include ensuring that the Organisation remains in compliance with the requirement shall be nominated.
- 2.4 A person or persons (Schedule or Programme controller) acceptable to the CAA, whose responsibility includes ensuring that the Schedule(s) or Programme(s) controlled by the Organisation remains in compliance with the applicable requirements, shall be nominated.
- 2.5 Personnel shall be competent, capable of fulfilling their respective role, and shall be adequately trained to carry out the particular function for which they are responsible. Training shall be given where necessary in the procedures and development of Schedules or Programmes. The personnel should demonstrate a sufficient familiarity with:
- a) Reliability Centred Maintenance processes;
 - b) MSG Analysis and MRB procedures (where applicable to the type);
 - c) Type Certification requirements;
 - d) Aircraft or system or component type;
 - e) Organisation procedures relating to Schedule or Programme amendment control;
 - f) Requirements applicable to the control of Schedules or Programmes.

- 2.6 Records shall be kept such that the Organisation is able to demonstrate that the development of the Schedule or Programme is justified by Approved data and in accordance with the Approved procedures.
- 2.7 The Organisation shall be maintained to the standard necessary to undertake the work for which it is Approved, and the CAA shall at all reasonable times, have access to the Organisation for the purpose of assessing the standard in use.
- 2.8 The CAA may revoke, suspend or vary the Terms of Approval if the conditions prescribed for the Approval are not maintained.

3 Maintenance Schedule or Programme Amendment Procedures

Maintenance Schedule and Maintenance Programme amendment procedures are required for compliance with CAP 360 Air Operator Certificate Part 2 Arrangements for Maintenance Support and JAR-OPS 1/3.905 Operator's Maintenance Management Exposition.

- 3.1 The procedures should contain reliability centred Maintenance Procedures which comply with A6-2 Appendix 1 and additionally have procedures relating to the Schedule or Programme control which contain the following provisions:
 - a) Task escalation or adjustment;
 - b) Maintenance Schedule or Maintenance Programme review;
 - c) Independent Quality Audit;
 - d) Service Bulletin or Service Information assessment;
 - e) Component, equipment and structures in-service performance review;
 - f) Maintenance Schedule or Maintenance Programme revision;
 - g) Maintenance procedure effectiveness review and amendment;
 - h) Manufacturer Maintenance Planning Document review and assessment;
 - i) Mandatory Airworthiness Directive review and assessment;
 - j) Operations/Maintenance liaison;
 - k) Sub-contract and supplier evaluation;
 - l) Training.
- 3.2 The implementation of such procedures requires the management, assessment and integration of a wide spread of data from a wide range of sources. As a consequence, the Organisation should be able to effectively manage procedures which affect a number of different departments within the Organisation. Such Maintenance Procedures are sometimes known as Maintenance Control or Maintenance Integration Procedures.
- 3.3 The Approved procedures shall make provision for a fully representative committee or group to meet on a regular basis to consider all of the operating and maintenance implications arising from the reviews set out in the above paragraph 3.2 and be able to collectively approve any associated Schedule or Programme amendments arising. Records shall be kept of the meeting and the associated minutes.
- 3.4 The Organisation shall make provision for the attendance of a representative of the CAA at any meetings held in accordance with 3.3. If, in the opinion of the CAA, the decisions reached regarding the amendment to the Schedule or Programme are not fully justified by the criteria presented, then the CAA may require that further substantiation is provided before the amendment may be incorporated.

Appendix 1 to A7-5 Maintenance Schedule and Maintenance Programmes

1 Introduction

In preparing the Maintenance Schedule or Maintenance Programme for initial Approval by the CAA, account should be taken of this paragraph. The Schedule or Programme shall be presented in two Parts as follows:-

- 1.1 **Maintenance Schedule or Maintenance Programme – Part 1.** Part 1 shall not be varied or amended without direct CAA Approval (with the exception of item c) the revision record) and should contain the following information:
- a) CAA AD 271 Approval Document;
 - b) Standard Maintenance Practices (SMP) as appropriate, including applicable aircraft registrations;
 - c) Schedule or Programme Revision Record;
 - d) Check Cycle criteria (e.g. A Check-400 FH, B Check-800 FH etc.);
 - e) Certification Maintenance Requirement, Mandatory Life Limits, Mandatory Regulatory Requirements;
 - f) MRB Safety Route (e.g. route 5 or 8) tasks (if applicable) or equivalent;
 - g) Reference to the applicable Maintenance Control Procedures or documents;
 - h) Sampling Programme details or procedures;
 - i) Schedule or Programme general particulars (see A6-2, 3.2 a)).
- 1.2 **Maintenance Schedule or Maintenance Programme – Part 2.** This part of the Schedule or Programme is that part which, subject to Approved procedures (see A7-5, 3), may be varied by the Applicant in accordance with those procedures. CAA Approval will be in accordance with an arrangement made by the CAA SRG Regional Office responsible for the Approval of the Schedule or Programme and associated procedures. Part 2 may contain the following:-
- a) Maintenance tasks recommended by the MRB or Manufacturer's maintenance planning guide (excluding those listed in Part 1 above);
 - b) Operator requirements (e.g. Operator supplemental inspections);
 - c) Recommended or optional SB/SIL etc;
 - d) Lubrication Programme (other than Lubrication tasks arising from Part 1, see 1.1);
 - e) Passenger entertainment and aircraft appearance tasks.

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Chapter A7-6 Master Minimum Equipment Lists and Minimum Equipment Lists

1 The information in this Chapter is for guidance in compiling Master Minimum Equipment Lists and Minimum Equipment Lists to comply with the requirements of Chapter A5-7 and Chapter A6-5 respectively.

2 Purpose

2.1 The purpose of the approved Master Minimum Equipment List (MMEL) required by Chapter A5-7 is to provide a Master List of permitted unserviceable equipment and systems for any aircraft of that given type at the time of despatch, which is certificated in the categories referred to in paragraph 2 of Chapter A5-7 and is within the weight limits referred to in that paragraph. Such MMELs will constitute the maximum permissible level of unserviceabilities for affected aircraft of the given type.

2.2 Operators of aircraft to which paragraph 2 of Chapter A5-7 applies can produce their own Minimum Equipment List (MEL) to enable the Permission required by Article 16 of the UK ANO to be granted. (See CAP 360 and CAP 549.) The MEL shall be no less restrictive than the MMEL.

3 Format – MMEL

3.1 Unless otherwise agreed by the CAA the format for all MMELs should be similar, regardless of the originator and should utilise an agreed referencing system such as ATA 100. In exceptional cases variations will be permitted. The standard format for all MMELs should be as follows:

- a) A title page which identifies the MMEL and its originator and the aircraft type to which it applies, and which carries the CAA Approval Statement referred to in paragraph 6.1 of Chapter A5-7;
- b) A Revision Record;
- c) A List of Effective Pages which should list all the effective pages, the Revision status of the whole document, the Revision status of each page and their issue dates;
- d) A Preamble which explains the purpose and other essential features;
- e) An explanation of the Coding and Terminology used;
- f) An individual page (or pages) for each System for which equipment or sub-systems on which despatch unserviceabilities are permitted; or where no despatch with unserviceabilities are permitted. These pages should be numbered for example 21/1, 21/2, 22/1 etc. Each such page should carry a Revision No. and date which corresponds with that given in the List of Effective Pages. The preferred standard format for these pages would be as follows:

CIVIL AVIATION AUTHORITY

(or the name of the Type Certificate holder/originator)

MASTER MINIMUM EQUIPMENT LIST

AIRCRAFT	REVISION NO: DATE:	PAGE:
(1) System & Sequence Numbers Item	(2) Rectification Interval	
	(3) Number Installed	
	(4) Number required for despatch	
	(5) Remarks or Exceptions	

- 3.2 The pages referred to in items 3.1 a) to e) above should be numbered consecutively in Roman Numerals and any which are not used should carry the legend 'INTENTIONALLY LEFT BLANK'. A Contents page which lists every page and the subjects covered by reference to the Systems concerned may also be included. This Contents page may be separate from the List of Effective Pages.
- 3.3 If Temporary Revisions (TRs) are to be issued, the parent MMEL should also contain a List of Effective TRs which should be generally in accordance with paragraphs 9.5 and 9.6 of Chapter A5-7.
- 3.4 CAA prepared MMELs will be printed on A4 paper and this is the preferred page size for other CAA Approved MMELs.
- 3.5 In cases of equipment and system unserviceability where Maintenance (M) or Operational (O) procedures are to be employed, the need for such procedures is to be indicated in the appropriate (Remarks) column against the item concerned. The actual procedures are to be defined and identified and are to be either provided with the MMEL, with suitable indexing, or may be provided in separate Manuals or publications. The proposed procedures are to be made available to the CAA for assessment at the time the draft MMEL is submitted.

4 Format – MEL

Unless otherwise determined by the CAA the format of the MEL prepared by an Operator shall comply in general with that of the approved MMEL for the particular aircraft type. Variations in the layout used to take account of varying equipment and systems installations, differences due to aircraft variants within a given type and Operators circumstances, experience, capabilities, route structures and practices etc., will be permitted within the overall constraint that an MEL shall be no less restrictive than the corresponding MMEL. See CAP 360 Part One and CAP 549.

Chapter A7-8 Technical Logs

1 Introduction

The Air Navigation Order requires that a Technical Log shall be kept for an aircraft registered in the United Kingdom in respect of which a Certificate of Airworthiness in either the Transport or Aerial Work Categories is in force. The Air Navigation Order further requires that a Technical Log shall contain details of the time the aircraft took off and landed, particulars of defects and any other information affecting the airworthiness or safe operation of the aircraft.

NOTE: In the case of an aircraft not exceeding 2730 kg Maximum Total Weight Authorised which is not operated by a person who is the holder of an Air Operator's Certificate or required to hold such a Certificate, an alternate form of record may be approved by the CAA.

2 Basic Technical Log Requirements

2.1 The Technical Log shall contain the following:

- a) A Title Page with the registered name and address of the Operator, the aircraft type and the full international registration marks of the aircraft;
- b) A valid Certificate of Maintenance Review as specified in Chapter A6-2;
- c) A Maintenance Statement of the next inspection due, to comply with the inspection cycle of the Approved Maintenance Schedule and any out of phase inspection or component change due before that time;

NOTE: CAP 360 Part Two gives an example of a Maintenance Statement which includes the Certificate of Release to Service required by Chapter A6-2 and which would be acceptable to the CAA.

- d) A readily identifiable section containing sector record pages. Each page shall be pre-printed with the Operator's name and page serial number and shall make provision for recording the following:
 - i) The aircraft type and registration mark;
 - ii) The date and place of take-off and landing;
 - iii) The times at which the aircraft took off and landed;
 - iv) Particulars of any defect in any part of the aircraft affecting the airworthiness or safe operation of the aircraft which is known to the Commander or, if no such defect is known to him, an entry to that effect;
 - v) The date and signature of the Commander following completion of item d) iv);
 - vi) The arrival fuel state;
 - vii) A Certificate of Release to Service as required by A6-2 in respect of any work carried out for the rectification of defects. This certificate shall be entered in such a position and manner as to be readily identifiable with the entry of the defect to which it relates;
 - viii) The quantities of fuel and oil uplifted, and the quantity available in each tank, or combination of tanks, at the beginning of each flight;

- ix) The running total of flying hours, such that the hours to the next inspection can be readily determined;
- x) Provision for pre-flight and daily inspection signatures;
- xi) The times when ground de-icing was started and completed.

- NOTES:**
- (1) Where sector record pages are of the multi-sector 'part-removable portion' type then such 'part-removable portions' shall contain any of the above information necessary plus all relevant data from 3, if applicable, to ensure the safe operation of the aircraft.
 - (2) Examples of sector record pages which would be acceptable to the CAA are shown in CAP 360 Part Two.

- e) A readily identifiable section containing acceptable deferred defect record pages. Each page shall be pre-printed with the Operator's name and page serial number and shall make provision for recording the following:
 - i) A cross reference for each deferred defect such that the original defect can be clearly identified in the sector record page section;
 - ii) The original date of occurrence of the defect deferred;
 - iii) Brief details of the defect;
 - iv) A cross reference for each deferred defect such that the action in respect of such deferred defect can be readily identified on the sector record page.

NOTE: An example of a deferred defect record page which would be acceptable to the CAA is shown in CAP 360 Part Two.

- 2.2 The format of all sector record pages shall be submitted to the CAA for acceptance, and agreement in respect of the supplementary information required (see 3).

3 Supplementary Technical Log Requirements

- 3.1 It will be necessary to record additional information for a specified aircraft. The following items are typical of what is required, where appropriate, but the list is not intended to be exhaustive:
 - a) **Maximum or Intermediate Contingency Power.** It is necessary to record the duration of maximum and intermediate contingency power usage, and subsequently to transfer the information to the engine log book or maintenance record. For rotorcraft the record of each use of these powers must also subsequently be transferred to the log cards or other appropriate documents applicable to those components of the transmission which always transmit the power from a single engine only, i.e. components upstream of any combining gearbox.
 - b) **Landings.** The number of landings carried out will be necessary for undercarriage component life consideration.
 - c) **Flight Pressure Cycles.** The number of pressure cycles will be necessary for fuselage life considerations.
- 3.2 Supplementary information shall be assessed by the Operator and agreed by the CAA.

4 Retention of Records

- 4.1 All entries in the Technical Log shall be made in duplicate, with provision for one copy of each entry to be removed and retained on the ground before the next flight, except that, in the case of an aeroplane of which the maximum total weight authorised does not exceed 2730 kg, or a helicopter, if it is not reasonably practicable for the copy of the technical log to be kept on the ground, it may be carried in the aeroplane or helicopter, as the case may be, in a box approved by the CAA for that purpose. Adequate arrangements shall be made to extract information recorded in the Technical Log for use by the Maintenance Organisation and Component Overhaul Organisation.
- 4.2 All entries in the Technical Log shall be retained by the Operator for a period not less than two years after the particular aircraft has been destroyed or permanently withdrawn from service except that the CAA may consider a different retention period in a particular case.

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Chapter A7-9 Modification Record Book

1 Introduction

- 1.1 The Modification Record Book is a statement of the modification history of the aircraft to which it relates.
- 1.2 The format of the Book complies with the Recommendations of the European Civil Aviation Conference (5th Plenary Session).
- NOTE:** Modification Record Books, for United Kingdom registered aircraft, were introduced on 1st January 1969.
- 1.3 A Modification Record Book must be kept for each aircraft of more than 2730 kg maximum authorised weight, registered in the United Kingdom.
- NOTE:** The word 'aircraft' used in the context of this Chapter A7-9, does not apply to engines and propellers where suitable Modification Records are maintained in appropriate log books. The Modification Record Book is considered an addition to the aircraft log book.
- 1.4 Modification Record Books may be purchased from the CAA's printers whose details are available on the inside cover of this publication.

2 Contents of the Modification Record Book

The following shall be recorded in the Modification Record Book:

- a) Modifications made to those parts of the aircraft on which airworthiness depends;
- b) Modifications made to the aircraft which affect modifications already listed in the Record Book;
- c) Major repairs, which have significantly altered the design affecting the airworthiness of the aircraft.

3 Commencing and Maintaining the Modification Record Book

- 3.1 **New Aircraft Initially Registered in the United Kingdom.** The manufacturer shall make available the information necessary to comply with the requirements of this Chapter A7-9 relevant to commencement for these aircraft, by stating the modifications embodied, additional to the basic design, at the time of certification.
- 3.2 **Used Aircraft.** The applicant for issue of a United Kingdom Certificate of Airworthiness (see Chapter A3-2) for a used aircraft shall be responsible for starting a Modification Record Book at the time of United Kingdom registration, and shall, at that time, record such of the modification history of the aircraft as is considered necessary by the CAA.
- 3.3 A Modification Record Book which is valid in the exporting country, and supplied with an aircraft to be imported and registered in the United Kingdom, may be acceptable in place of the Modification Record Book required by this Chapter. Such a book shall be certified as accurate and up to date by the competent airworthiness authorities of the exporting country, and shall be acceptable to the CAA in all other particulars.

- 3.4 The Modification Record Book must be up to date at the issue of the Certificate of Airworthiness for a new aircraft, at the renewal of the Certificate (see A3-4), and at the time of sale or lease of the aircraft.
- 3.5 The Modification Record Book shall be kept by the owner or Operator of the aircraft, and shall be made available for examination, when required by the CAA.

Chapter A7-10 Weight and Balance Report

Introduction

This Chapter A7–10 contains guidance for compiling weight and balance reports and weight and centre-of-gravity schedules as required by Chapter A5–4.

1 Weight and Balance Report - Aircraft Exceeding 5700 kg

- 1.1 A Weight and Balance Report shall be produced for each Prototype, Variant and Series aircraft the Maximum Weight Authorised of which exceeds 5700 kg.
- 1.2 The Weight and Balance Report shall record such loading data as is essential to enable the particular aircraft to be correctly loaded, and shall include sufficient information for an Operator to produce written loading instructions in compliance with the requirements of the Air Navigation Order.
- 1.3 The Weight and Balance Report shall apply to the aircraft in the condition in which it is to be delivered to the user.
- 1.4 One copy of the Weight and Balance Report shall be sent to the CAA Safety Regulation Group.
- 1.5 The Weight and Balance Report shall include the following items:
 - a) Reference number and date;
 - b) Designation, nationality, and registration marks of the aircraft, or if these are not known, the manufacturer's serial number;
 - c) A copy of the Weighing Record, produced in accordance with Chapter A5–4 paragraph 3.5;
 - d) A copy of the Weight and Centre-of-Gravity Schedule including the list of Basic Equipment, if this is separate from Part A of the Schedule (see paragraph 2.7.2);
 - e) A diagram and a description of the datum points which are used for weighing and loading and an explanation of the relationship of these points to the fuselage frame numbering system or other identifiable points, and, where applicable, to the standard mean chord (SMC);
 - f) Information on the lever arms appropriate to items of Disposable Load. (This should include the lever arms of fuel, oil and other consumable fluids or substances in the various tanks (including agricultural material in hoppers), which, if necessary, should be shown diagrammatically or graphically; lever arms of passengers in seats appropriate to the various seating layouts; mean lever arms of the various baggage holds or compartments);
 - g) Details of any significant effect on the aircraft c.g. of any change in configuration, such as retraction of the landing gear.

2 Weight and Centre-of-Gravity Schedule - Aircraft Exceeding 2730 kg (See Chapter A7–10 Appendix No.1)

A Weight and Centre-of-Gravity Schedule shall be provided for each aircraft the Maximum Total Weight Authorised of which exceeds 2730 kg, except that for an aircraft the Maximum Total Weight Authorised of which exceeds 5700 kg, the

information contained in Parts B and C of the Schedule may, for a new aircraft, be given as part of the Weight and Balance Report.

- NOTES:**
- 1 The Weight and Centre-of-Gravity Schedule may be in the form set down in Chapter A7–10 Appendix No. 1, but variations are permitted within the Requirements.
 - 2 Where reference is made in Chapter A7–10 Appendix No. 1, to the Flight Manual, but such a document has not been issued, it will be necessary to refer to the Certificate of Airworthiness.

2.1 Each Schedule shall be identified by the aircraft designation, nationality and registration marks, or if these are not known, by the manufacturer's serial number. The date of issue of the Schedule shall be given and the Schedule shall be signed by a representative of an Approved Organisation or a person acceptable to the CAA. A statement shall be included indicating that the Schedule supersedes all previous issues.

2.2 The date and reference number of the Weight and Balance Report, or, as appropriate to the weight, other acceptable information upon which the Schedule is based, shall be given.

NOTE: For aircraft for which a Weight and Balance Report is not mandatory, the Weighing Record would normally be used. (see Chapter A5–4, paragraph 3.5)

2.3 A copy of each issue of the Schedule shall be retained by the Operator, and where the Schedule is re-issued the previous issue shall be retained with the aircraft records. A copy of the current Schedule and any related list of Basic Equipment (see paragraph 2.7), shall be sent to the CAA Safety Regulation Group.

2.3.1 For aircraft the Maximum Total Weight Authorised of which does not exceed 5700 kg, a copy of the Schedule shall be included in the Flight Manual, if a Flight Manual is applicable, or if this is not the case, displayed or retained in the aircraft in a suitably identified stowage.

2.4 Operators shall issue a revised Weight and Centre-of-Gravity Schedule when the weight and c.g. is known to have changed to an extent greater than that which has been agreed by the CAA as applicable to a particular aircraft type.

2.5 If the aircraft has not been re-weighed, the revised Weight and Centre-of-Gravity Schedule shall contain a statement that calculations have been based on the last Weight and Balance Report, or other information (see paragraph 2.2), and the known weight and c.g. changes.

2.6 The datum to which the c.g. limits relate is defined in Part A (see paragraph 2.7) and this may be different from the datum defined in the Certificate of Airworthiness or Flight Manual. When a different datum is used it shall be adequately defined, its precise relationship to the datum in the Certificate of Airworthiness or Flight Manual shall be given, and any lever arms and moments which appear in any part of the Schedule shall be consistent with the datum so declared.

NOTE: In the case of helicopters, it may be necessary to present lever arms and moments about more than one axis, depending on the c.g. limits specified in the Flight Manual.

2.7 **Part A Basic Weight.** The Basic Weight and the associated position of the c.g. of the aircraft as derived from the most recent Weight and Balance Report or other information together with any subsequent weight and c.g. changes, shall be stated. The position (retracted or extended) of the landing gear associated with this information shall be stated.

- 2.7.1 Where the Maximum Total Weight Authorised does not exceed 5700 kg, Part A shall also include the list of Basic Equipment showing the weight and lever arm of each item, or this information may form separate pages attached to the Weight and Centre-of-Gravity Schedule, with a suitable reference in Part A of the Schedule to this procedure.
- 2.7.2 Where the Maximum Total Weight Authorised exceeds 5700 kg, Part A shall include the list of Basic Equipment showing the weight, lever arm and moment of each item, or shall make reference to the document in which such a list is included.
- 2.8 **Part B Variable Load.** The variable Load may be detailed for as many roles as the Operator wishes, but for every role the weights and moments shall be given. Weights of crew members may be assumed to be not less than the weights shown in the Air Navigation (General) Regulations, provided that the Maximum Total Weight Authorised exceeds 5700 kg, or the aircraft has a total seating capacity for 12 or more persons. Otherwise the weight of each person must be determined by weighing.
- 2.9 **Part C Loading Information.** This shall include all relevant information so that, knowing the Disposable Load which is intended to be carried, the weight and the position of the centre-of-gravity of the aircraft can be calculated. At least the following shall be given:
- a) The lever arm of the c.g. of a passenger in each seat;
 - b) The mean lever arm of each compartment or area in the aircraft where Disposable Load, such as luggage or freight, may be placed;
 - c) Any significant change in the c.g. of the aircraft (change in moment) which will result from a change in configuration, such as the retraction and extension of the landing gear;
 - d) The lever arm of the c.g. of fuel, oil and other consumable fluids or substances in each tank, including any significant variation of the lever arm with the quantity loaded;
 - e) The maximum total usable capacities of the tanks for fuel, oil and other consumable fluids or substances and the weight of fluids or substances when the tanks are filled to their capacities assuming typical densities.
- 2.10 A statement shall be made in the Schedule to the effect that it is a requirement of the Air Navigation Order that the Commander satisfies himself before take-off that the load is of such weight, and is so distributed and secured, that it may safely be carried on the intended flight.
- 2.11 The weights, distances, moments and quantities may be given in any units, provided that these are used consistently and do not conflict with the markings and placards on the aircraft.

3 **Weight and Centre-of-Gravity Schedule - Aircraft Not Exceeding 2730 kg** (See A7-10 Appendix No. 2)

For aircraft the Maximum Total Weight Authorised of which does not exceed 2730 kg, either a Weight and Centre-of-Gravity Schedule which complies with 2 and 3.2, or a Loading and Distribution Schedule which complies with 3.1 shall be provided.

3.1 **Loading and Distribution Schedule**

- 3.1.1 The Loading and Distribution Schedule (hereinafter in this paragraph 3.1 referred to as 'the Schedule') shall contain at least the information in A7-10 Appendix No.2.

- 3.1.2 Each Schedule shall be identified by the aircraft designation, nationality and registration marks, or if these are not known, by the manufacturer's serial number.
- 3.1.3 A copy of each issue of the Schedule shall be retained by the Operator, and when the Schedule is re-issued the previous issue shall be retained with the aircraft records. A copy of the current Schedule and any related list of Basic Equipment shall be sent to the CAA Safety Regulation Group.
- a) A copy of the Schedule shall be included in the Flight Manual, if a Flight Manual is applicable, or, if this is not the case, the Schedule shall be displayed or retained in the aircraft in a suitably identified stowage.
- 3.1.4 Operators shall issue a revised Schedule when:
- a) the Basic Weight of the aircraft is known to have undergone changes in excess of 0.5% of the Maximum Total Weight Authorised; or
- b) the total moment applicable to the Basic Weight is known to have changed to an extent greater than that which has been agreed by the CAA as applicable to a particular aircraft type.
- 3.1.5 If the aircraft has not been re-weighed, the revised Schedule shall contain a statement that calculations have been based on the last Weighing Record and the known weight and moment changes.
- 3.1.6 Instructions for the use of the Schedule, together with the Loading Graphs, shall be included.
- 3.1.7 A statement shall be given in the Schedule to the effect that it is a requirement of the Air Navigation Order that the Commander satisfies himself before the aircraft takes off that the load is of such a weight, and is so distributed and secured that it may safely be carried on the intended flight.
- 3.1.8 The weight, distances, moments and quantities may be given in any units provided that these are used consistently and do not conflict with the markings and placards on the aircraft.
- 3.1.9 **Part A Basic Data.** Part A shall contain the following:
- a) The Basic Weight and the associated moment, and c.g. position of the aircraft, as derived from the most recent Weighing Record, together with any subsequent changes;
- b) The Maximum Total Weight Authorised appropriate to each permitted use (e.g. aerobatics);
- c) The definition of the c.g. datum;
- d) The date and reference number of the Weighing Record and list of Basic Equipment upon which the Schedule is based;
- e) The date and reference of the Loading Graphs of the Loading and Distribution Schedule shall be given;
- f) A statement of the date of preparation and validity of the Schedule, signed by a representative of an Approved Organisation, or a person acceptable to the CAA. A statement shall also be included indicating that the Schedule supersedes all previous issues.
- 3.1.10 **Part B Loading.** Columns shall be provided which list all standard items of Variable Load and make provision for the associated weight and c.g. moments to be recorded and totalled for a particular flight. Columns shall also be provided for recording an example of a typical aircraft loading calculation. This example shall employ the same

weight and c.g. moment figures as recorded in the Loading Graphs (see paragraph 3.1.11).

- 3.1.11 **Part C Loading Graphs.** Graphs, sufficient to ascertain moments, and to enable the Operator to determine that the aircraft loaded weight and c.g. moment are within the prescribed limits shall be provided. The graphs shall be identified by aircraft designation, date of compilation and source. Suitable sources are the aircraft manufacturer or other competent person. An example application shall be included using the same figures as employed in the Loading and Distribution Schedule example.
- 3.2 **Weight and Centre-of-Gravity Schedule** (see Chapter A7-10 Appendix No. 2, paragraph 3). In addition to compliance with paragraph 2, the Weight and Centre-of-Gravity Schedule for aircraft the Maximum Total Weight Authorised of which does not exceed 2730 kg, shall contain instructions for the determination of the loaded weight, the total load moments and resultant c.g. positions.

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Appendix 1 to A7-10

Weight and Centre-of-Gravity Schedules for Aircraft Exceeding 2730 kg

1 Introduction (see Chapter A5-4, paragraph 5)

This A7-10 Appendix No.1 presents a specimen Weight and c.g. Schedule which constitutes an acceptable means of compliance with the appropriate requirements of Chapter A5-4, paragraph 5, and where elected with Chapter A5-4, paragraph 6.

NOTE: Imperial Units are shown on the specimen. Where it is necessary to use S.I. Units these should be used throughout.

SPECIMEN SCHEDULE

Reference	NAL/286
Produced by	Loose Aviation Ltd.
Aircraft Designation	Flynw 2E
Nationality and Registration Marks	G-BZZZ
Manufacture	F.L.Y. Co. Ltd.
Manufacturer's Serial Number	44
Maximum Total Weight Authorised	7300 lb
Centre-of-Gravity Limits	Refer to Flight Manual reference number 90/946

Part A Basic Weight

The Basic Weight of the aircraft as calculated from Weight and Balance Report/ Weighing Record¹

NAL/W/95 dated 31 August 1988 is : 5516 lb

The c.g. of the aircraft in the same condition at this weight and with the landing gear extended is : 127 in aft of datum

The total moment about the datum in this condition in lb in/100 is : 7015

NOTE: The datum is at fuselage station 0 situated 114 inches forward of the wing leading edge. This is the datum defined in the Flight Manual. All lever arms are distances in inches aft of datum.

The Basic Weight includes the weight of 5 gal unusable fuel and 1 gal unusable oil and the weight of the following items which comprise the list of Basic Equipment:

1. Delete as appropriate.

	WEIGHT	LEVER ARM
	(lb)	(in)
Two Marzell propeller type BL-H3Z30	127 each	76
Two engine driven 100 ampere alternators type GE-361	27 each	117
One 13 Ah Ni-Cd battery CB-7	31	153
etc.	etc.	etc.

Part B Variable Load

The weight, lever arms and moments of items of Variable Load are shown below. The Variable Load depends upon the equipment carried for the particular role.

	WEIGHT	LEVER ARM	MOMENT
	(lb)	(in)	(100 lb in)
Pilot (one)		108	
De-icing fluid 1.5 gal	12	140	17
Life-jackets (7)	14	135	19
Row 1 passenger seats (two)	60	173	104
Row 2 passenger seats (two)	60	215	129
Row 3 passenger seats (two)	60	248	149
Table	8	256	20
One stretcher and attachments (in place of seat rows 2 and 3)	45	223	100
Medical stores	15	250	37

Part C Loading Information (Disposable Load)

The total moment change when the landing gear is retracted in lb in/100 is: -18.

The appropriate lever arms are:

	WEIGHT	LEVER ARM	CAPACITY
	(lb)	(in)	(Imp.gal)
Fuel in tanks 1 and 2	1368 ¹	145	190
Engine Oil	50 ¹	70	5.5
Forward baggage		21	
Rear baggage		261	
Passengers in Row 1 seats		171	
Passengers in Row 2 seats		213	
Passengers in Row 3 seats		246	
Patient in stretcher		223	

NOTE: To obtain the total loaded weight of aircraft, add to the Basic Weight the weights of the items of Variable and Disposable Load to be carried for the particular role.

1. Densities – Petrol 7.2 lb Imp. gal; Kerosene 8.1 lb Imp. gal; Oil 9.0 lb Imp. gal.

This Schedule was prepared (date) and supersedes all previous issues.

SignedInspector/Engineer

on behalf of

Approval Reference

NOTE: (Not part of the specimen Schedule) In Part B, Variable Load, of this Schedule the actual weight of the pilot is required in accordance with the Air Navigation (General) Regulations for aircraft the Maximum Total Weight Authorised of which does not exceed 5700 kg or with less than 12 persons seating capacity. Hence the pilot's weight and calculated moment are omitted in the example.

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Appendix 2 to A7-10 Weight and Centre-of-Gravity and Loading and Distribution Schedules - Aircraft Not Exceeding 2730 kg

1 Introduction (See A5-4, 6)

This Appendix No. 2 contains acceptable means of compliance in respect of Weight and Centre-of-Gravity and Loading and Distribution Schedules provided in accordance with A5-4, 6.

2 Loading and Distribution Schedule (see A5-4, 6 and A7-10, 3).

The Schedule (including the graphs) and the List of Basic Equipment should, as far as is practical, take the form of Figures 1, 2 and 3.

AIRCRAFT LOADING AND DISTRIBUTION SCHEDULE FOR AIRCRAFT NOT EXCEEDING 2730 kg.						
Aircraft Type:		Aircraft Registration or Manufacturer's Serial No:			Aircraft Nationality:	
PART A BASIC DATA						
ITEM		WEIGHT		MOMENT		C.G. POSITION
Basic Aircraft						
MTWA		Normal use		The C.G. datum is defined as.....		
		Aerobatic use			
<p>Note: Basic Aircraft Weight and C.G. Position were determined from the following documents contained in the aircraft record.</p> <p>a) Weighing Record Ref: Date:</p> <p>b) Basic Equipment List Ref: Date:</p> <p>c) Loading and Distribution Charts Figs 1 and 2 Ref: Date:</p> <p>This Schedule was prepared and the Loading and Distribution Charts Figs. 1 and 2 were current on..... and supersede all previous issues.</p> <p>Signed.....</p> <p>Authority</p>						
PART B LOADING						
<p>1. To obtain moments of items refer to Fig. 1, and read off moment from corresponding weight. Repeat this for all items of load, and record both weight and moment in the appropriate columns below.</p> <p>2. Total the weight column. TOTAL THE MOMENT COLUMNS, ASCERTAIN THE RESULTANT MOMENT, and apply the results to Fig. 2 in order to ascertain that the resulting intersection point falls within the permissible loading envelope, appropriate to the certification Category. The envelope(s) take account of fuel usage in flight . Examples of the use of the Figures are shown by arrowed lines.</p>						
ITEM	EXAMPLE AIRCRAFT			YOUR AIRCRAFT		
	WEIGHT	MOMENT		WEIGHT	MOMENT	
(+)		(-)	(+)		(-)	
Basic Weight (See Part A)						
Fuel - Standard (@7.2lb/Imp gallon) (@ 6.0 lb/US gallon)						
Fuel - Long Range (@7.2lb/Imp gallon) (@ 6.0 lb/US gallon)						
Pilot and Passenger (Row 1)						
Passenger (Row 2)						
Passenger (Row 3)						
Baggage						
TOTALS OF MOMENTS						
TOTAL WEIGHT & RESULTANT MOMENT						
<p>In accordance with the ANO, it is a requirement that the pilot satisfies himself before take-off that the load is of such a weight, and is so distributed and secured, that it may safely be carried on the intended flight.</p> <p>Full conformity with the instructions contained in this document will ensure compliance with the Flight Manual in respect of aircraft loading.</p>						

Figure 1 (Chapter A7-10 Appendix No.2) FRONT OF SCHEDULE

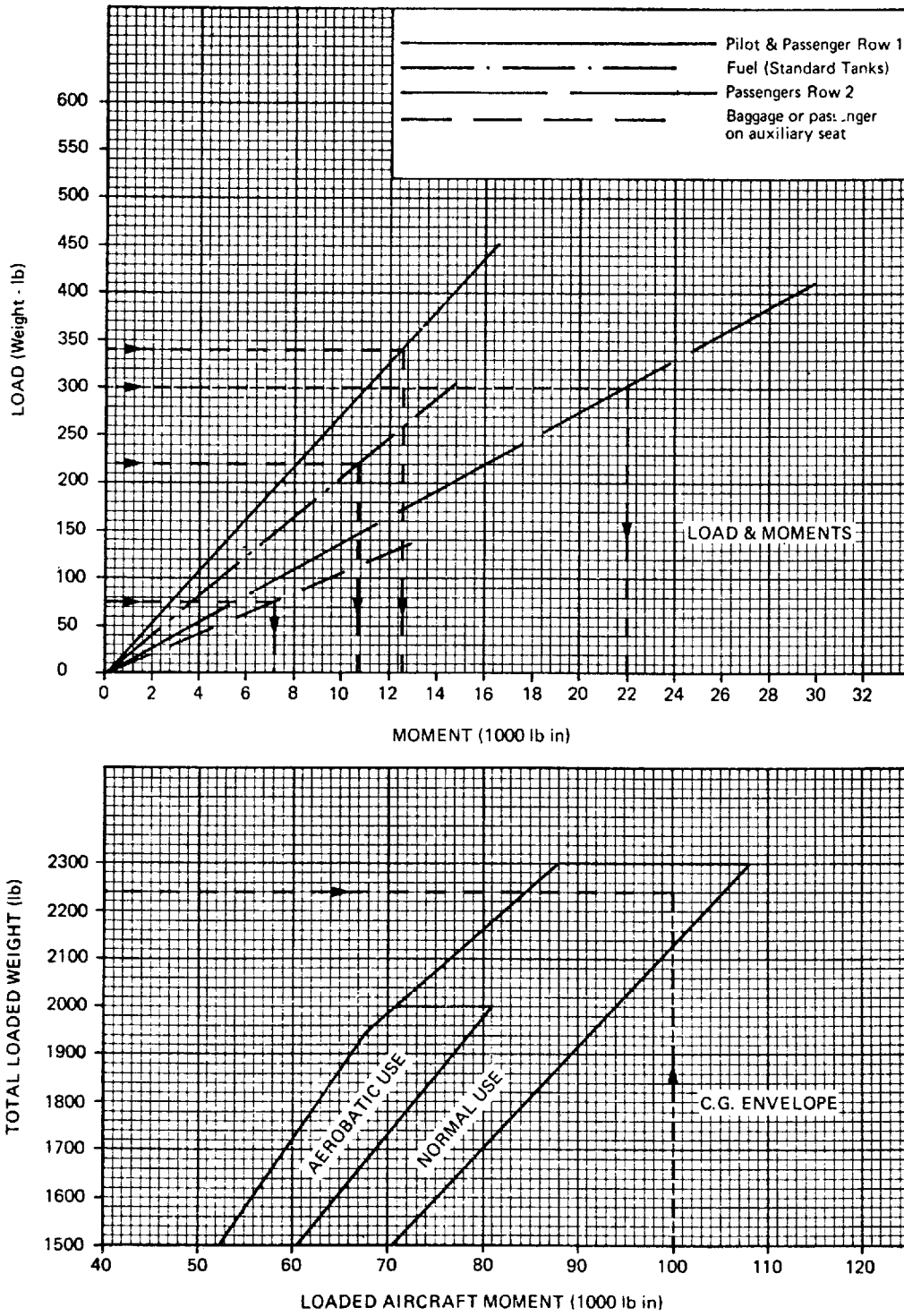


Figure 2 (A7-10 Appendix No.2) REVERSE OF SCHEDULE

LIST OF BASIC EQUIPMENT		Ref:	Date:		
Aircraft Type	Aircraft registration or Manufacturer's Serial No.	Aircraft Nationality			
PART A BASIC DATA					
1. The aircraft is as defined in Type Certificate Data Sheet (or equivalent)					
2. The Weighing Record from which the Basic Aircraft Weight is calculated is Ref: Date:					
3. The Basic Aircraft Weight is made up as follows:					
(a) Basic aircraft, including standard equipment (e.g. seat lap straps)					
(b) Items of non-standard equipment, as listed in Part B					
4. The moment of the aircraft as at 3 is					
PART B NON-STANDARD EQUIPMENT INCLUDED IN WEIGHT STATED IN PART A					
ITEM	WEIGHT	MOMENT		DATE OF CHANGE OR EMBODIMENT	REMARKS
		(+)	(-)		
PART C NON STANDARD EQUIPMENT NOT INCLUDED IN WEIGHT STATED IN PART A					
NOTE: When re-calculation of Basic Aircraft Weight is made (see BCAR Section A, Chapter A5-4), items in Part C should be included in the re-calculation and moved to Part B.					

Figure 3 (A7-10 Appendix No. 2) List of Basic Equipment

3 Weight and Centre of Gravity Schedule (see A7-10, 3.2)

An acceptable means of compliance with A7-10, 3.2 would be to include in the Schedule instructions on the following lines:

SPECIMEN INSTRUCTIONS

- 1 By reference to Weight and Centre-of-Gravity Schedule, ascertain the lever arm of each item (Basic Weight, Variable Load, Disposable Load).
- 2 To obtain moment of an item, multiply the weight of the item by the corresponding lever arm, and record the moment for each item of load, giving the moment a positive sign if the item is aft of the datum, and a negative sign if it is forward of the datum. Enter the weight of the item in the weight column.
- 3 Total the weight column.
- 4 Total the moment columns. If (+) and (-) moments are recorded, total each column and obtain the total resultant moment, by subtracting the lesser from the greater.
- 5 Divide the total (or total resultant) moment by the total weight to obtain c.g. position, positive or negative, relative to the datum, and check that this is within the prescribed c.g. limits.
- 6 To check that the fuel consumed during a flight does not cause the c.g. position to be outside the prescribed limits, re-total the weights in 3 and the moments in 4, but omitting the total fuel weight and the corresponding moment(s), respectively. Add the weight and moment of the fuel expected to remain in the tanks at the end of the flight. Divide the final total resultant moment by the final total weight to obtain the c.g. position, and check that it is still within the prescribed c.g. limits.

NOTE: Where there are any other significant quantities of consumable fluids or substances (e.g. crop spraying), similar account should be taken of them.

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Sub-section A8 Approvals

Introductory Note to Sub-Section A8 CAA Approved Organisations

1 CAA Approved Organisations are divided into the following groups:

Group	Definition	Chapter
A1 Primary Companies	Organisations approved for the design and manufacture of complete aircraft, engines, or controlled items of equipment, and the overhaul of the Organisations' own product.	A8-1

NOTE: After 25 February 2008, the CAA will no longer accept new applications for A8-1 approvals except for manufacturers of microlight aircraft. Applicants should instead, apply for the appropriate A8-21 approval.

A2 Suppliers	Organisations approved for the manufacture of components, assemblies and items of equipment to acceptable standards/specifications. Ultimate design responsibility is vested in the Primary Company which specifies the product.	A8-2
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NOTE: After 25 February 2008, the CAA will no longer accept new applications for A8-2 approvals except for manufacturers of microlight aircraft. Applicants should instead, apply for the appropriate A8-21 approval.

B1 Overhaulers	Organisations approved for inspections, overhauls, repairs, replacements, and embodiment of modifications to aircraft, engines, components or items of equipment.	A8-3
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B4 Test Houses	Organisations approved for testing and specialised examination to established standards.	A8-6
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DOA Design Organisations	Organisations approved for the design of aircraft, engines, propellers or parts thereof, including design changes and repairs.	A8-21
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E1 Design Organisations	Organisations approved for the design of complete aircraft, systems, or equipment.	A8-8
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NOTE: After 25 February 2008, the CAA will no longer accept new applications for A8-8 E1 approvals except for manufacturers of microlight aircraft. Applicants should instead, apply for the appropriate A8-21 approval.

E2 Organisations approved for the design of A8-8
Design Organisations modifications to aircraft, systems, or equipment.

NOTE: After 25 February 2008, the CAA will no longer accept new applications for A8-8 E2 approvals except for manufacturers of microlight aircraft. Applicants should instead, apply for the appropriate A8-21 approval.

E3 Organisations approved for investigation and A8-8
Design Organisations certification (to the CAA) of the design standard of an aircraft.

E4 Approval of organisations responsible for the A8-20
Organisations restoration, airworthiness control and maintenance of aeroplanes and rotorcraft of military origin.

F1 Organisation approved for the full management A8-9
Flight Test and control of flights under 'B' Conditions.
Organisations

F3 Organisation for the management and control of A8-9
Organisations flights under 'B' Conditions for the purposes of a specified test or development programme of defined scope and specified duration.

F4 Organisation approved for the management and A8-9
Organisations control of flights under 'B' Conditions for the purpose of a specified test or development programme of defined scope and specified duration, where the Applicant determines and the CAA agrees that there are no significant flight safety implications.

M3 Organisations approved, in respect of aeroplanes A8-15
Aeroplane & and rotorcraft the maximum total weight authorised of which does not exceed 2730 kg, to make recommendations in respect of C of A
Rotorcraft renewal and to perform maintenance checks and
Maintenance Star Inspections.
Organisations

M4 Organisations approved for the maintenance of A8-18
Airship Maintenance specific airships.
Organisations

M5 Approval of organisations responsible for the A8-20
Organisations restoration, airworthiness control and maintenance of aeroplanes and rotorcraft of military origin.

POA Organisations approved for the production of A8-21
Production aircraft, engines, propellers or parts thereof.
Organisations

QE Organisations approved to carry out airworthi- A8-22
Qualified Entity ness investigations on behalf of the CAA.

- 2** The CAA may grant approval in more than one Group.
- 3** Separate approvals may be required where sections or divisions of an Organisation are autonomous, or where premises are at significantly different geographical locations.
- 4** On grant of approval an Organisation will receive 'Terms of Approval', and a CAA Organisation Approval reference number which should be quoted on all relevant documents.
- 5** Fees are established in the Civil Aviation Authority Official Record, Series 5, CAA Scheme of Charges, for investigations connected with the grant, variation and maintenance of each approval.

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Chapter A8-1 Primary Companies – Group A1

1 Introduction

An Organisation may be Approved to provide reports and certify that an aircraft, engine or controlled item of equipment (see A4-2 (B4-2), A4-4 (B4-4) or A4-10 (B4-10)) has been designed, manufactured, inspected and tested in conformity with acceptable standards/specifications and in compliance with British Civil Airworthiness Requirements, and in particular cases, with such other requirements as the CAA may consider appropriate, subject to compliance with the procedures set out in this Chapter. The Approval, when granted, will apply to the whole Organisation headed by the Chief Executive and will normally include authority to overhaul, repair, modify and test the company's own products.

2 Application

Form AD 457, copies of which may be obtained from the CAA Safety Regulation Group shall be completed and returned to the same address.

3 Requirements for the Grant of Approval

3.1 The Applicant for Approval shall nominate the following persons:

- a) A senior person, or group of persons, whose functions will include co-ordination of all appropriate departments to ensure compliance with the relevant airworthiness requirements and the technical content of customers' orders insofar as airworthiness may be affected. Such person(s) shall be directly responsible to the Chief Executive;
- b) Departmental heads and other senior members of the staff as appropriate to the class of work for which Approval is sought;
- c) Signatories to relevant Certificates and Declarations as defined in this Section A;
- d) A senior person directly responsible to the person or persons nominated under a) above, for the functions of an airworthiness office which must:
 - i) be established and staffed on a permanent basis;
 - ii) act as the focal point for co-ordinating airworthiness matters and have adequate access to senior management and adequate authority to ensure the necessary control over relevant airworthiness activities for which the Applicant is responsible;
 - iii) have adequate staff and resources to handle the airworthiness aspects of the projects for which the Applicant is responsible including continuing airworthiness.

3.2 The Applicant shall provide an Exposition (see A8-1 Appendix No. 1) of the Organisation including the following information:

- a) The terms of reference of senior technical personnel as applicable to activities under CAA Approval. Authority to negotiate directly with the CAA on specific subjects shall be defined;
- b) The associated chains of responsibility;

- c) The scope of the design, development, manufacturing and test facilities together with information on essential inspection and test equipment;
 - d) The procedures adopted for controlling matters directly affecting airworthiness, and other technical standards which may affect airworthiness at all stages of the design, development and manufacturing processes, including the Quality Control and Assurance systems operated in respect of internal and external work (see 3.12);
 - e) Any further matters which the CAA decides are necessary arising from initial assessment or subsequent supervisory visits.
- 3.2.1 Unless otherwise notified, two copies of the Exposition and of all subsequent amendments shall be supplied to the CAA Safety Regulation Group, together with a copy of the distribution list.
- 3.3 The Organisation shall, in the opinion of the CAA, be such as to ensure that, in all matters affecting airworthiness, full and efficient co-ordination exists within departments and between related departments.
- 3.4 The Applicant shall satisfy the CAA that the persons nominated in accordance with 3.1 are capable and responsible persons and written evidence of their qualifications and experience shall be supplied. The Applicant shall also satisfy the CAA that such persons are conversant with CAA requirements and procedures insofar as they affect the particular matters for which they are responsible. The CAA shall be satisfied that the management of the Organisation will be conducted with due regard to the needs of airworthiness and the character of airworthiness requirements.
- 3.5 The staff in all appropriate technical departments shall be of sufficient number and experience as may reasonably be expected to undertake the volume of work in the class for which Approval is sought. The design office shall include specialists in all relevant branches of aeronautics whose experience and qualifications are such as to ensure that good judgement is exercised with full appreciation of current aeronautical practice, whether or not specifically covered by the Requirements. Where appropriate, the firm shall be able to call upon the services of flight test personnel whose experience and qualifications are acceptable to the CAA (see A8-9).
- 3.6 The staff shall be provided with adequate accommodation, facilities and equipment for the effective performance of their duties. Office, laboratory and workshop environmental conditions shall be controlled as necessary in relation to the work. Bonded and quarantine stores shall be provided.
- 3.7 The Organisation shall have facilities for producing drawings, specifications, test schedules and related information. The appropriate departments shall be so organised that, unless otherwise agreed by the CAA, all assumptions, calculations, drawings and reports on which airworthiness depends are subject to verification. Such verification shall involve checking by a person other than the one who did the original work and may take the form of suitable tests ensuring the basic accuracy of the calculations and drawings.
- 3.8 Design records shall be such as to provide substantiation of, and proper correlation between, all the data comprising the design. The method used shall be such as to make possible the provision of the necessary design information of any product on which the airworthiness of an aircraft may depend as long as the product may be in service, and until such time after that as may be agreed by the CAA.
- 3.9 Organisations shall have facilities, or access to suitable facilities, for producing and publishing the necessary technical information required for the safe operation, maintenance, overhaul and repair of the aircraft. The arrangements shall include

notification, by document such as Service Bulletins, of mandatory modifications and inspections. Engine and equipment manufacturing firms shall provide the manufacturer of the aircraft with such information.

- 3.10 The Organisation shall hold and make available to staff, CAA publications, Approved manuals, specifications, data sheets, and related literature appropriate to the class of work for which Approval is sought. Suitable arrangements shall be made to ensure that these documents are amended up to date.
- 3.11 The Organisation shall have facilities, or access to suitable Approved facilities, for making such tests as are necessary to establish compliance with acceptable standards/specifications and the Requirements (e.g. facilities for structural and metallurgical testing, flight testing, weighing and determining the position of the centre-of-gravity of an aircraft).
- 3.12 A Quality Control and Assurance system shall be operated to the satisfaction of the CAA in respect of all products handled under the terms of CAA Approval. In addition, Quality Control Surveillance shall be exercised in respect of any work carried out for the Approved Organisation by an unapproved Organisation to ensure that the required standards of airworthiness are achieved. Approved Organisations shall, as a condition of placing the order, arrange for the right of entry by the CAA to such an unapproved Organisation should the occasion arise. Placing of orders on an Organisation not Approved by the CAA is permissible only where the Approved Organisation possesses the full technical capability to verify conformance with acceptable Quality standards.

NOTE: CAA Approved Organisations when undertaking work outside their terms of Approval are deemed to be unapproved.

- 3.12.1 An Organisation Approved as a Primary Company placing orders on suppliers and unapproved organisations shall satisfy itself that the origin of each item supplied is identified and satisfy itself that the item is acceptable and suitable for the intended purpose.
- 3.12.2 **Definitions.** The following definitions apply.
- a) **Quality.** The quality of a product is the degree to which it meets the requirements of the customer. With manufactured products quality is a combination of quality of design and quality of manufacture;
 - b) **Quality Control.** A management system for programming and co-ordinating the Quality maintenance and improvement efforts of the various groups in a design and/or manufacturing Organisation, so as to permit production in compliance with CAA requirements, and any specific customer requirements affecting airworthiness;
 - c) **Quality Assurance.** Overall supervision by the manufacturer of the Quality control tasks to ensure that the Quality required is obtained;
 - d) **Quality Control Surveillance.** Supervision by the Approved Organisation placing the order of the unapproved Organisation's Quality Control organisation and methods.
- 3.13 The calibration of test equipment shall be checked as frequently as is necessary to maintain confidence in the accuracy of the equipment.
- 3.14 Inspection stamps, of a type and design Approved by the CAA, shall be issued to inspectors for their individual use.
- 3.15 A Certificate of Release to Service (see Chapter A6-2/A6-7 or B6-2/B6-7) shall be issued in respect of each overhaul, repair, replacement, modification or inspection.

Where work is carried out on part of an aircraft or its equipment by an Organisation not handling the complete aircraft, a JAA Form One shall be issued to the consignee.

- 3.16 An Authorised Release Certificate/Airworthiness Approval Tag (JAA Form One), the form of which shall be Approved by the CAA, shall be issued to the consignee for all aircraft parts released under authority of the CAA (see Appendix No. 3). For additional clarity to the recipient, when a JAA Form One is issued under the authority of an Approval granted by the CAA under BCAR requirements, (that is, not in accordance with the JAA requirements), it is recommended that the following statement should be made in Block 13:

'This Certificate has been issued under national rule provisions'

NOTE: The Authorised Release Certificate/Airworthiness Approval Tag (JAA Form One) constitutes the Certificate of Release to Service prescribed in paragraph 3.15 above.

- 3.17 Technical records shall be maintained and shall be such that proper correlation of all work carried out is established with relevant documents including the following, as appropriate:
- a) Customer's order;
 - b) Aircraft, engine or part;
 - c) Relevant standards/specifications;
 - d) Stores records;
 - e) Test and Inspection records including a record of each identified (i.e. by serial number) component and item of equipment;
 - f) Certificates of Release to Service;
 - g) Outgoing Authorised Release Certificate/Airworthiness Approval Tag (JAA Form One).
- 3.17.1 Essential records shall not be destroyed without authorisation from the CAA.

4 Requirements for the Maintenance of Approval

- 4.1 The Organisation shall be maintained at the standard necessary to undertake the work for which it is Approved and the CAA shall, at all reasonable times, have access to the Organisation for the purpose of assessing the standard in use.
- 4.2 A proposed change of the Chief Executive shall be notified to the CAA in writing. The CAA may require the Organisation to supply further information in order to satisfy itself of the suitability of the official concerned insofar as it may affect the CAA Approval of the Organisation.
- 4.3 Changes in the persons nominated in accordance with paragraph 3.1 shall be notified to the CAA in writing for acceptance.
- 4.4 The Exposition required by paragraph 3.2 shall be reviewed periodically by the Organisation and any necessary amendments promulgated.
- 4.5 The Organisation shall consult the CAA if in any difficulty about the interpretation of the Requirements, associated procedures, or on any airworthiness matter which in their opinion involves new problems or techniques.
- 4.6 At all reasonable times CAA representatives shall have access to all drawings, calculations, reports and records relating directly or indirectly to the airworthiness of an aircraft, engine or any part thereof. The CAA shall also have the right to witness

tests or inspections in any way associated with establishing airworthiness of an aircraft, engine, or any part thereof. The Organisation shall keep the CAA representatives fully informed of all defects, incidents and problems which arise during design and development and which could have a significant bearing on airworthiness.

- 4.7 In order to provide information on problems and defects affecting an aircraft, engine or part in service, the Organisation shall maintain a suitable monitoring system. If, subsequent to Approval of an aircraft, engine or part, the Organisation becomes aware of defects which affect the continuing airworthiness of the product, the CAA shall be advised in order that the appropriate joint action may be taken. Such advice shall be given to the CAA irrespective of the country of registration of the aircraft or whether the defect occurs in the United Kingdom or overseas.
- 4.8 The CAA may revoke, suspend or vary the terms of Approval if the conditions required for Approval are not maintained.

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Appendix 1 to A8-1 Primary Companies Group A1

1 Introduction

This Appendix is intended as a general guide to the compilation of expositions as required by Chapters A8-1 to A8-6 of Sub-section A8.

- 1.1 Minimum acceptable requirements for compiling an exposition are not prescribed in this Appendix, but an exposition based on the content of this Appendix, would be acceptable to the CAA.
- 1.2 The Exposition should be produced in a concise form, and its scope, insofar as it applies to the approval sought, should include a) a description of the Organisation's premises and facilities, b) details of the senior staff responsibilities, and c) the procedures in use to ensure compliance with CAA Requirements and the Organisation's quality standards. The Exposition should be presented in loose leaf form, so that it may be readily amended.
- 1.3 Where an Organisation desires to use an exposition to satisfy requirements other than those of the CAA, the CAA has no objection to the inclusion of this additional information, provided that the CAA Requirements are fully satisfied.
- 1.4 An exposition cannot be completed until the relevant approval requirements of Sub-section A8 have been satisfied, and it must be in its final draft before agreement by the CAA, and before terms of approval can be granted. CAA Staff will discuss the Organisation's preliminary drafts during their visit(s) in order to agree the final content.
- 1.5 The Exposition will form the basis of CAA approval of the Organisation.
- 1.6 This Appendix has been written under the following headings:
 - a) Identification of the Exposition (see 2.1);
 - b) Introduction (see 2.2);
 - c) Premises and undertakings of the Organisation related to CAA approval (see 2.3);
 - d) Terms of Approval (see 2.4);
 - e) Personnel (see 2.5);
 - f) Facilities (see 2.6);
 - g) Procedures (see 2.7).

2 Basic Requirements for an Exposition

- 2.1 **Identification.** The Exposition should be identified as follows:
 - a) Company name, document title and reference number;
 - b) Amendment standard by issue number/date/amendment record;
 - c) Approval by Chief Executive;
 - d) Holders of the Exposition, i.e. distribution list;
 - e) Official title of person responsible for administration of the Exposition;
 - f) Contents List or Index.

- 2.2 **Introduction.** The Introduction should explain the purpose of the document for the guidance of the Organisation's own personnel, and should give general information concerning the Organisation's history and development, in order to provide background information to the CAA. Where appropriate, relationships with other Organisations, forming part of the same group, should be mentioned.
- 2.3 **Organisation's Premises and Undertakings.** Brief details of premises should be included quoting addresses, approximate floor space, and types of buildings. The scope of the Organisation's aerospace undertakings, at the addresses of the various premises, should be defined.
- 2.4 **Terms of Approval.** The Exposition will form the basis of CAA Approval. A concise definition of the work authorised will be prescribed in the CAA terms of approval. It is recommended that the CAA Certificate and schedule of approval are reproduced and included in the Exposition. The Schedule of Approval may, in some cases, be supplemented by Capability Lists. A Capability List must bear an issue number and date and may not be amended without the agreement of the CAA. A note to this effect should be included at the bottom of the page.
- 2.5 **Personnel.** This Section of the Exposition should nominate the persons required under paragraph 3.1 of the relevant Chapter of Sub-section A8, giving their terms of reference within the Organisation, and, in particular, outlining responsibilities for liaison with CAA. Duplicate copies of the CAA Form AD 458 should be completed by the persons nominated under paragraphs 3.1 i) and ii) of the relevant Chapter of Sub-section A8, and by such other persons as may be required by the CAA.
- 2.5.1 A diagram, or diagrams, showing chains of responsibility of nominated departmental heads, and senior technical personnel up to the Chief Executive, should be included. These diagrams should also indicate, by suitable means, and/or written description, how technical co-ordination throughout the Organisation is effected.
- 2.5.2 The 'Personnel' Section should also contain a list of Approved Signatories to the relevant Certificates and Declarations, which are required by BCAR Section 'A' or Section 'B', giving their names, positions in the company, and sample signatures. Details of certification responsibilities should be included.
- 2.5.3 In some cases, the Organisation may wish to include more information, concerning personnel and their responsibilities, than is required by the CAA, but amendments to the Exposition which affect nominated staff, as required by BCAR, must not be made without CAA concurrence.
- 2.6 **Facilities.** This Section should provide information concerning the Organisation's technical facilities and associated essential equipment, which will vary according to the type(s) of activity involved and the specific terms of approval sought.
- 2.6.1 Under the Section devoted to facilities, information under the headings given below, should be included, where applicable. If there is a good deal of detailed information the use of Appendices is recommended.
- a) Research;
 - b) Design/Drawing Office;
 - c) Development;
 - d) Type Testing;
 - e) Planning;
 - f) Manufacture and/or Process;

- g) Overhaul and Repair;
- h) Routine Testing;
- j) Storage;
- k) Quality assurance and/or Inspection;
- l) Metrology and Standards;
- m) Specialised Facilities e.g. NDT, Spectrography;
- n) Publications and Library;
- o) Technical Records;
- p) Product Support;
- q) Training.

2.6.2 The headings should be varied to suit the size of the Organisation and its activities.

2.7 **Procedures.** A concise description is required of the Organisation's technical procedures covering all aspects of work conducted within the CAA Terms of Approval; this should show how matters affecting airworthiness are controlled, by references, where appropriate, to existing internal instructions. In order to meet the Requirements, Organisations may elect to establish a Quality Control system (for approval as a Group A Company this is mandatory). The system adopted will, obviously, depend on the size and complexity of the Organisation and the nature of the work undertaken.

2.7.1 The headings below are examples of the procedures which may need to be covered in the Exposition:

- a) Quality programme, policy and administration, including the Quality Audit system;
- b) Product design and development control;
- c) Modification procedures;
- d) Concession procedure;
- e) Product evaluation, including product approval, field responsibility and defect investigation;
- f) Reliability programmes;
- g) Control of bought-out items, including Quality Control Surveillance of sub-contractors;
- h) Manufacture and process control;
- j) Control of stock, including procedures for handling non-conforming parts;
- k) Tool, metrology and test equipment control;
- l) Process Control;
- m) Technical records;
- n) Technical publications control, including Service Bulletin procedures;
- o) Equipment overhaul, modification and repair procedures, including certification;
- p) Test flight procedures;
- q) Training;

- r) Appendices, giving examples of i) standard forms, cross referenced to the written procedures section; ii) tags indicating the purpose and use of each; iii) inspection stamps, and other identification symbols used to indicate status of parts; iv) Approved Certificate and/or Test Certificate.

Appendix 2 to A8-1 Surveillance of Sub-Contractors

1 Introduction

This Appendix is intended as a general guide to Approved Organisations wishing to place orders on unapproved Organisations.

2 Exposition

The prime contractor should detail in the Exposition:

- a) the reasons for sub-contract control, its purpose and any other supporting data;
- b) the name of the person responsible for the quality of sub-contract work; and
- c) the procedures for controlling sub-contract work.

3 Procedures

In making arrangements for adequate control of sub-contract work the prime contractor should take into account the procedures and responsibilities outlined in 3.1 and 3.2.

3.1 Responsibilities of the Prime Contractor

- a) Provision of adequate staff and facilities to enable the person responsible to implement the surveillance system. Periodic review of arrangements to ensure that procedures are adequate for the current work submitted to sub-contractors.
- b) Conducting an initial survey to ensure that the sub-contractor's inspection system and supporting facilities are adequate for the anticipated sub-contract work.
- c) Assessing all inspection fixtures and test equipment manufactured or bought out by the subcontractor, particularly where these represent the sole acceptance standard.
- d) Maintaining a register of sub-contractors who, from the initial surveys, reach the required standard for the type of work to be carried out. This agreed list will be used when placing sub-contract orders and should only be changed with the agreement of the person responsible.
- e) Arranging periodic visits as necessary to ensure that the agreed standards are maintained by the sub-contractors.
- f) Ensuring that the sub-contractor establishes the cause of defects and deficiencies and takes prompt corrective action.
- g) Ensuring that all purchase orders/contracts specify adequate and precise requirements.
- h) Supplying the sub-contractor with all the necessary technical information (i.e. drawings, process sheets, company procedures) and ensuring that this information is kept up to date with subsequent amendments.
- j) Evaluating the quality of sub-contracted work. This will usually be by receipt inspection, and/or vendor rating arrangements, to ensure that the requirements of

the purchase order/contract have been met, and the performance of the sub-contractor controlled.

- k) Providing a system to control items not conforming to the purchase order/contract and establishing an adequate concession procedure.
- l) Maintaining records in connection with the supervision of sub-contractors and monitoring of sub-contract work.

3.2 **Responsibilities of the Sub-contractor.** The prime contractor should ensure before placing an order with a sub-contractor that the sub-contractor accepts the responsibilities detailed in paragraphs 3.2.1 to 3.2.8

3.2.1 **Nomination of Person Responsible.** Nominate a Chief Inspector/Quality Manager, to be responsible for all technical aspects of the purchase order/contract. He must be technically and administratively competent and acceptable to the prime contractor. The Chief Inspector/Quality Manager must not be given discretionary powers to depart from the requirements of the purchase order/contract.

- a) The Chief Inspector/Quality Manager should be responsible directly to a nominated Senior Executive who is not normally responsible for production.
- b) The prime contractor should be notified of any change in the position of the Chief Inspector/Quality Manager, and of any other significant change of company ownership, structure, Directors, etc.
- c) The Chief Inspector/Quality Manager should have access to all necessary technical and administrative documents.

3.2.2 **Inspection/Quality Control Department.** Provide an inspection organisation with adequate facilities and accommodation. Ensure the competency and efficiency of all inspectors engaged on sub-contract work.

3.2.3 **General**

- a) Ensure that the production and inspection departments are provided with appropriate issues of drawings and associated data/instructions considered necessary by the prime contractor.
- b) Ensure compliance with BCAR Chapter A8–10, Approval of Welders, where appropriate.
- c) Make application under concession procedures to the prime contractor as necessary for the acceptance of manufactured items which do not conform to the relevant drawing(s), specification(s) or purchase order/contract.
- d) Establish the cause of defects and deficiencies and take prompt corrective action.
- e) Amend any technical information held on behalf of the prime contractor on receipt of such amendments from the prime contractor.
- f) Notify the prime contractor of any errors found in their drawings, specifications, purchase order, tools, parts and materials supplied.
- g) Ensure that no further sub-contracting takes place without prior permission of the prime contractor.
- h) Permit right of access into sub-contractor's premises by the prime contractor and any CAA representative.

3.2.4 **Measuring or Other Quality Control Equipment.** Provide measuring, test equipment and apparatus as necessary to control process and product verification, unless supplied by the prime contractor. All equipment used for the inspection,

process control and testing shall be calibrated and maintained periodically as agreed with the prime contractor. This applies to the sub-contractor's own equipment as well as that supplied by the prime contractor.

3.2.5 **Stores**

- a) Provide a Quarantine Store as necessary.
- b) Provide a Bonded Store as necessary, and ensure that only supplies from this source are used for fulfilment of purchase order/contract.
- c) Ensure that only material and parts which conform to specification requirements are used. Where appropriate, material shall be accompanied by an Approved Certificate. Aeronautical parts shall be accompanied by an Approved Certificate or acceptable release documentation as defined in Airworthiness Notice No. 11 to the satisfaction of the prime contractor's Chief Inspector/Quality Manager.

3.2.6 **Records.** Retain essential records in accordance with the requirements of the prime contractor. Such records should include the following information:

- a) 'On receipt' inspection acceptance of all supplies;
- b) Material identity and batch number from receipt to despatch;
- c) Evidence of interstage and final inspection having been completed including the identity of the responsible inspection personnel;
- d) Where applicable, statements of any authorised modifications incorporated during manufacture.

3.2.7 **Inspection Stamps**

- a) Inspection stamps provided by the sub-contractor should identify an individual inspector.
- b) Inspection stamp designs to be agreed by the prime contractor before use.
- c) Internal register of the inspection stamps issued to be maintained.
- d) Inspection stamp quarantine periods to be defined.

3.2.8 **Release Certifications.** Issue release certifications, each of which should conform with the following arrangements:

- a) All items supplied to the prime contractor to be certified as being in accordance with purchase order/contract;
- b) Concessions granted by the prime contractor to be detailed;
- c) The release certification document to contain information to enable co-relation with items supplied;
- d) The following wording for the certification is normally acceptable:

Certified that the goods listed hereon have been inspected and tested and unless otherwise stated, conform to the full requirements of the purchase order/contract.

- e) The release certification documents to be signed by the Chief Inspector/Quality Manager of the sub-contractor or his delegated representative acceptable to the prime contractor.

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Appendix 3 to A8-1 Instructions for the Completion of the Authorised Release Certificate/ Airworthiness Approval Tag (JAA Form One) by Manufacturing Organisations

1 Introduction

This Appendix No. 3 is provided as a general guide to the Authorised Release Certificate/Airworthiness Approval Tag (JAA Form One) Issue 3 required by this Chapter A8-1 and Chapter A8-2.

2 Purpose and Scope

- 2.1 This Appendix relates only to the use of the Certificate for release of 'New' parts, i.e. parts which have not previously been used in operational service.
- 2.2 Appendix 3 to Section 2 of JAR-145 details use of the Certificate for 'Used' parts, i.e. parts which have been used in operational service.
- 2.3 The purpose of the Certificate is to identify the conformity or airworthiness, and eligibility status of products/appliances/parts/components/assemblies, (hereafter referred to as 'part(s)') after manufacture, in accordance with BCAR A8-1 and A8-2 only.
- 2.4 The Certificate referenced JAA Form One (Issue 3 or later) is called the 'Authorised Release Certificate'.
- 2.5 The Certificate is to be used for export/import purposes, as well as for domestic purposes, and serves as an official certificate for the delivery of parts from the manufacturer to users. The Certificate is not a delivery or shipping note.
- 2.6 The Certificate may only be issued by manufacturing/production organisations/ persons Approved by the CAA, within the scope of such an Approval, or by the CAA itself.
- 2.7 Aircraft are not to be released using the Certificate.
- 2.8 A mixture of 'New' and 'Used' parts is not permitted on the same Certificate.
- 2.9 A mixture of 'Conformity' and 'Airworthiness' items is not permitted on the same Certificate.
- 2.10 Under no circumstances may a Certificate be issued for any part when it is known that the part is unserviceable or is not in a condition for safe operation.

3 General

- 3.1 The Certificate should comply with the format of Figure 1 attached, including Block numbers, in that each Block must be located in accordance with the layout. The size of each Block may however be varied to suit the individual application, but not to the extent that would make the Certificate unrecognisable. The overall size of the certificate may be significantly increased or decreased so long as the certificate remains recognisable and legible. If in doubt consult the CAA.

NOTE: The User responsibility statements are normally placed on the reverse of this Certificate, but they may be added to the front of the Certificate by reducing the depth of the form.

- 3.2 All printing should be clear and legible to permit easy reading.
- 3.3 The Certificate may either be pre-printed or computer generated, but in either case, the printing of lines and characters must be clear and legible. Pre-printed wording is permitted in accordance with Figure 1, but no other certification statements are permitted.
- 3.4 Completion of the Certificate should be in English.
- 3.5 The details to be entered on the Certificate can be either machine/computer printed, or hand-written using block letters, and should permit easy reading. Abbreviations should be restricted to a minimum.
- 3.6 The space remaining on the reverse side of the Certificate may be used by the originator for any additional information, but should not include any certification statement.
- 3.7 The top copy Certificate should accompany the parts, and correlation should be established between the Certificate and the part(s). A copy of the Certificate should be retained by the Organisation that manufactured the part. Where the Certificate format and the data is entirely computer generated, subject to acceptance by the CAA, it is permissible to retain the Certificate format and data on a secure database.
- 3.8 There is no restriction on the number of copies of the Certificate sent to the customer or retained by the originator.
- 3.9 The Certificate that accompanies the part may be attached to the part by being placed in an envelope for durability.

4 Effectivity

- 4.1 Except as stated in paragraph 4.2, the JAA Form One published as Appendix No. 3 to Chapter A8-1 dated 15 June 1990 should be used for the release of all parts from that date or from the date that Approval was granted under Chapter A8-1 and Chapter A8-2.
- 4.2 Issue 3 of JAA Form One should be used for the release of all parts from 1 January 1997 but may be used prior to this date if available to the Approved Organisation.
- 4.3 Parts released under previous approved formats of JAA Form One issue one (as shown in Appendix No 3 to Chapter A8-1 dated 15 June 1990) prior to 1 January 1997 will remain valid.

5 Completion of Release Certificate by the Originator

Except as otherwise stated, there should be an entry in all Blocks to make the document a valid certificate.

Block 1 The country of origin of the Civil Aviation Authority is the United Kingdom. It may be pre-printed.

Block 2 The first line in this Block should be the Civil Aviation Authority followed by the statement 'A member of the JAA'.

- Block 3 A unique number must be pre-printed in this Block for Certificate control and traceability purposes, except that in the case of a computer generated Certificate, the unique number need not be pre-printed, where the computer is programmed to produce the number.
- Block 4 The full name and address of the Organisation releasing the part(s) covered by this Certificate. This Block may be pre-printed. Logos, etc., are permitted if the logo can be contained within the Block.
- Block 5 Completion of the Block is optional. Its purpose is to reference work order/contract/invoice or any other internal organisational process, such that a fast traceability system can be established. Completion of this Block is strongly recommended, in the absence of part Serial Numbers.
- Block 6 This Block is provided for the convenience of the Organisation issuing the Certificate to permit easy cross-reference to the "Remarks" Block 13, by the use of item numbers. Completion is not mandatory. Where a number of items are to be released on the Certificate, it is permissible to use a separate listing cross-referring Certificate and list to each other.
- Block 7 The name or description of the part should be given. Preference should be given to use of the Illustrated Parts Catalogue (IPC) designation. The description is to include reference to any applicable CAA Equipment Approval, JTSO or JPA Authorisations etc.
- Block 8 State the Part Number. Preference should be given to use of the IPC number designation.
- Block 9 Used to indicate the Type-Approved applications for which the released parts are eligible for installation. The following entries are permitted;
- (a) The specific or series aircraft, propeller, or engine model, or a reference to a readily available catalogue or manual which contains such information, for example: 'A300'.
 - (b) '**Various**', if known to be eligible for installation on more than one model of Type-Approved product, unless the originator wishes to restrict usage to a particular model installation when it should so state. This includes items which have independent Approval status, and which may be eligible for use in a number of different applications, e.g. appliances for which CAA Equipment Approval, or JTSO Authorisation has been issued in accordance with JAR-21, Sub-part O.
 - (c) '**Unknown**', if eligibility is unknown.
 - (d) '**None**', to be used only when it is known that the parts do not yet have a Type-Approved application, for example: pending type certificate, for test only, pending Approved data. If this category is used, then appropriate explanatory information must be provided in Box 13 and new parts may only be given 'Conformity' release.
- NOTE:** Any information in Block 9 does not constitute authority to fit the part to a particular aircraft, engine or propeller. The User/Installer should confirm via documents such as the Parts Catalogue, Service Bulletins, etc. that the part is eligible for the particular installation.
- Block 10 State the quantity of parts being released.

- Block 11 State the part Serial Number or Batch Number if applicable, if neither applicable, state 'N/A'.
- Block 12 Enter one or a combination of appropriate standard words from the following table. The table lists, in quotes, the standard words permitted for use when releasing new parts prior to entry into service, i.e. the parts have not been previously used in operational service. It also details the circumstances and conditions under which they may be used. In all cases the certification rules relating to Block 14 apply, the appropriate 'Conformity' or 'Airworthiness' box is to be marked, and Block 15 is to be signed.

TABLE OF STANDARD WORDS FOR NEW PARTS

1 'MANUFACTURED'

- (a) The production of a new part in conformity with the applicable design data, or
- (b) Re-certification by the original manufacturer after rectification work on a part, previously released under 1(a) above, which has been found to be unserviceable prior to entry into service, e.g. defective, in need of inspection or test, or shelf life expired. Details of the original release and the rectification work are to be entered in Block 13, or
- (c) Re-certification of new parts from 'Conformity' to 'Airworthiness' at the time of Approval of the applicable design data, provided that the parts conform to the approved design data. An explanation of the basis of release, and details of the original release, are to be entered in Block 13.

2 'INSPECTED'/'TESTED'

The examination of a previously released new part;

- (a) to establish conformity with the applicable design data; or
- (b) in accordance with a customer-specified standard or specification, details of which are to be entered in Block 13; or
- (c) to establish serviceability, and condition for safe operation, prior to re-release as a spare, where the part has been obtained with a JAA Form One. An explanation of the basis of release, and details of the original release, are to be entered in Block 13.

3 'MODIFIED'

The alteration, by the original manufacturer, of a previously released part prior to entry into service. Details of the alteration and the original release are to be entered in Block 13.

NOTE: The above statements should be supported by reference to the approved data/manual/ specification. Such information shall be identified in Block 13.

Block 13 It is mandatory to state any information in this Block either direct or by reference to supporting documentation, that identifies particular data or limitations relating to the parts being released that are necessary for the User/Installer to make the final airworthiness determination of the part. The information shall be clear, complete and provided in a form and manner which is adequate for the purpose of making such a determination.

Each statement must be clearly identified as to which item it relates.

If there is no statement, state 'None'.

Examples of conditions which would necessitate statements in Block 13 are;

- Usage restriction for repaired items.
- Modification standard.
- Alternative Approved parts supplied.
- Concessions applicable.
- Details of repair work carried out or reference to a document where this is stated.
- Compliance or non-compliance with AD's, or Service Bulletins.
- Information on life limited parts.
- Condition of parts or reference to a document detailing this information.
- Manufacturing date or cure date.
- Shelf life data.
- Shortages.
- Time Since New (TSN), etc.
- Exceptions to the notified special requirements of the importing country.
- Specially configured to meet the notified special requirements of the importing country
- Re-certification of previously released 'new' items.

For additional clarity to the recipient, when a JAA Form One is issued under the authority of an Approval granted by the CAA under BCAR requirements, (that is, not in accordance with the JAA requirements), it is recommended that the following statement should be made in block 13:

'This Certificate has been issued under national rule provisions'

This statement may be pre-printed on the certificate.

- Block 14 This block should only be used to indicate the status of new parts. If the part fully conforms to an Approved Design standard then the 'Airworthiness' box should be marked. If the part conforms to applicable design data, which is not Approved, for a reason that must be stated in Block 13, (e.g. pending type certificate, for test only, pending approved data) then the 'Conformity' box should be marked. Only one box should be marked. Mixtures of 'Airworthiness' and 'Conformity' parts are not permitted on the same JAA Form One. Also refer to the notes for completion of Block 9.
- Block 15 The hand-written normal signature of a person who has written authority from an Approved Organisation to make Certifications in respect of new parts. Use of a stamp instead of a signature is not permitted, but the authorised person may add a stamp impression to his signature to aid recognition. Subject to the agreement of the CAA in any particular case, computer-generated signatures may be acceptable, if it can be demonstrated that an equivalent level of control, traceability, and accountability exists.
- Block 16 State the full authorisation reference given by the CAA to the Organisation/person releasing the new parts or, in the case of release by a CAA staff member, the identity of the CAA staff member.
- Block 17 The name of the person signing Block 15, printed, typed, or written in a legible form.
- Block 18 The date on which Block 15 is signed, in the format day/month/year.
- Block 19 Not used for release of new parts.
- Block 20 Not used for release of new parts.
- Block 21 Not used for release of new parts.
- Block 22 Not used for release of new parts.
- Block 23 Not used for release of new parts.

1 UNITED KINGDOM		2 CIVIL AVIATION AUTHORITY			JAA FORM ONE		3 Certificate Ref. No.	
		A member of the JAA			AUTHORISED RELEASE CERTIFICATE			
4 Organisation approved by Block 2 Authority to issue this Form							5 Work Order/Contract/Invoice	
6 Item	7 Description	8 Part No.	9 Eligibility ¹	10 Qty	11 Serial/Batch No	12 Status/Work		
13 Remarks								
Limited life parts will normally be accompanied by maintenance history including life used.								
14 Airworthiness Conformity only Certifies that the part(s) identified above except as otherwise specified in Block 13 was (were) manufactured/inspected in accordance with the applicable design data and with the airworthiness regulations of the stated country. (See over)				19 JAR-145.50 Release to Service Other regulation specified in Block 13 Certifies that the work specified above except as otherwise specified in Block 13 was carried out in accordance with JAR-145 and in respect to that work, the part(s) is (are) considered ready for release to service. (See over)				
15 Signature		16 Approval Reference Number		20 Signature		21 Approval Reference Number		
17 Name		18 Date (d/m/y)		22 Name		Date (d/m/y)		

JAA Form One - Issue 3

1 Installer must cross-check eligibility with applicable technical data

Figure 1

AUTHORISED RELEASE CERTIFICATE – JAA FORM ONE USER/INSTALLER RESPONSIBILITIES

- NOTE:
- 1 It is important to understand that the existence of the document alone does not automatically constitute authority to install the part/component/assembly.
 - 2 Where the user/installer works in accordance with the national regulations of an Airworthiness Authority different from the Airworthiness Authority specified in block 2 it is essential that the user/installer ensures that his/her Airworthiness Authority accepts parts/components/assemblies from the Airworthiness Authority specified in block 2.
 - 3 Statements 14 to 19 do not constitute installation certification. In all cases the aircraft maintenance record must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.

Chapter A8-2 Suppliers – Group A2

1 Introduction

An Organisation may be Approved to certify that aeronautical components, assemblies and items of equipment have been manufactured, inspected and tested in conformity with acceptable specifications/standards and to CAA requirements, subject to compliance with the procedures set out in this Chapter. The Approval, when granted, will apply to the whole Organisation headed by the Chief Executive and will normally include authority to overhaul, repair, modify, test and inspect the company's own products. The Approval will necessitate control of standards/specifications and amendments thereto to the satisfaction of the CAA. The ultimate responsibility for the product and its fitness for purpose is vested in the Primary Company or Design Organisation which specifies the product. Approval under this Chapter A8-2 will not be granted to Organisations performing subcontract work where inspection on receipt can verify compliance with the specification/order.

2 Application

Form AD 457, copies of which may be obtained from the CAA Safety Regulation Group, shall be completed and returned to the same address.

3 Requirements for the Grant of Approval

3.1 The Applicant for Approval shall nominate the following persons:

- a) A senior person, or group of persons, whose functions will include co-ordination of all appropriate departments to ensure compliance with the relevant airworthiness requirements and the technical content of customers' orders insofar as airworthiness may be affected. Such person(s) shall be directly responsible to the Chief Executive;
- b) Departmental heads and other senior members of staff as appropriate to the class of work for which Approval is sought;
- c) Signatories to Approved Certificates.

3.2 The Applicant shall provide an Exposition (see A8-1 Appendix No.1) of the Organisation, including the following information:

- a) The terms of reference of senior technical personnel as applicable to activities under CAA Approval. Authority to negotiate directly with the CAA on specific subjects shall be defined;
- b) The associated chains of responsibility;
- c) The scope of the manufacturing and test facilities together with information on essential inspection and test equipment;
- d) The procedures adopted for controlling matters directly affecting airworthiness, and other technical standards which may affect airworthiness at all stages of the design, development and manufacturing processes, including the Quality Control and Assurance systems operated in respect of internal and external work (see 3.11);

- e) Any further matters which the CAA decides are necessary arising from initial assessment or subsequent supervisory visits.
- 3.2.1 Unless otherwise notified, two copies of the Exposition and of all subsequent amendments shall be supplied to the CAA Safety Regulation Group, together with a copy of the distribution list.
- 3.3 The Organisation shall, in the opinion of the CAA, be such as to ensure that, in all matters affecting airworthiness, full and efficient co-ordination exists within departments and between related departments.
- 3.4 The Applicant shall satisfy the CAA that the persons nominated in accordance with 3.1 are capable and responsible persons and written evidence of their qualifications and experience shall be supplied. The Applicant shall also satisfy the CAA that such persons are conversant with CAA requirements and procedures insofar as they affect the particular matters for which they are responsible. The CAA shall be satisfied that the management of the Organisation will be conducted with due regard to the needs of airworthiness and the character of airworthiness requirements.
- 3.5 The staff in all appropriate technical departments shall be of sufficient number and experience as may reasonably be expected to undertake the volume of work in the class for which Approval is sought.
- 3.6 The staff shall be provided with adequate accommodation, facilities and equipment for the effective performance of their duties. Office, laboratory and workshop environmental conditions shall be controlled as necessary in relation to the work. Bonded and quarantine stores shall be provided.
- 3.7 The Organisation shall have facilities, or access to suitable approved facilities, for making such tests as are necessary to establish compliance with acceptable standards/specifications and the Requirements. The calibration of test equipment shall be checked as frequently as is necessary to maintain confidence in the accuracy of the equipment.
- 3.8 The Organisation shall have facilities, or access to suitable facilities, for producing manufacturing drawings, specifications, test schedules and technical information required for the safe operation, maintenance, overhaul and repair of the items for which the firm is Approved and shall provide the Primary Company, which specifies the product, with such information.
- 3.9 Design records shall be such as to ensure proper correlation of drawings and amendments with all the data which comprises the design and the Organisation shall not authorise variation of build standard or test schedules without the concurrence of the appropriate Primary Company.
- 3.10 The Organisation shall hold and make available to staff, CAA publications, Approved manuals, specifications, data sheets and related literature appropriate to the class of work for which Approval is sought. Suitable arrangements shall be made to ensure that these documents are amended and kept up to date.
- 3.11 A Quality Control and Assurance system shall be operated to the satisfaction of the CAA in respect of all products handled under the terms of CAA Approval. In addition, Quality Control Surveillance shall be exercised in respect of any work carried out for the Approved Organisation by an unapproved Organisation to ensure that the required standards of airworthiness are achieved.

Approved Organisations shall, as a condition of placing the order, arrange for the right of entry by the CAA to such an unapproved Organisation should the occasion arise. Placing of orders on an Organisation not Approved by the CAA is permissible only

where the Approved Organisation possesses the full technical capability to verify conformance with acceptable Quality Standards.

NOTE: CAA Approved Organisations when undertaking work outside their terms of Approval are deemed to be unapproved.

- 3.11.1 An Organisation Approved as a supplier placing orders on an unapproved organisation shall satisfy itself that the origin of each item supplied is identified and satisfy itself that the item is acceptable and suitable for the intended purpose.
- 3.11.2 **Definitions.** The following definitions apply:
- a) **Quality.** The quality of a product is the degree to which it meets the requirements of the customer. With manufactured products quality is a combination of quality of design and quality of manufacture.
 - b) **Quality Control.** A management system for programming and co-ordinating the Quality maintenance and improvement efforts of the various groups in a design and/or manufacturing Organisation, so as to permit production in compliance with CAA requirements, and any specific customer requirements affecting airworthiness.
 - c) **Quality Assurance.** Overall supervision by the manufacturer of the Quality Control tasks to ensure that the Quality required is obtained.
 - d) **Quality Control Surveillance.** Supervision by the Approved Organisation placing the order of the unapproved Organisation's Quality Control organisation and methods.
- 3.12 Inspection stamps of a type and design Approved by the CAA shall be issued to inspectors for their individual use.
- 3.13 A Certificate of Release to Service (see A6-2 (B6-2)/A6-7 (B6-7)) shall be issued in respect of each overhaul, repair replacement, modification or inspection and retained by the Organisation.
- 3.14 An Authorised Release Certificate/Airworthiness Approval Tag (JAA Form One), the form of which shall be Approved by the CAA, shall be issued to the consignee for all aircraft parts released under authority of the CAA (see A8-1, Appendix No. 3). For additional clarity to the recipient, when a JAA Form One is issued under the authority of an Approval granted by the CAA under BCAR requirements, (that is, not in accordance with the JAA requirements), it is recommended that the following statement should be made in block 13:
- 'This Certificate has been issued under national rule provisions'.**
- NOTE:** The Authorised Release Certificate/Airworthiness Approval Tag (JAA Form One) constitutes the Certificate of Release to Service prescribed in 3.13 above.
- 3.15 Technical records shall be maintained and shall be such that proper correlation of all work carried out is established with relevant documents including the following, as appropriate:
- a) Customer's order;
 - b) Part(s);
 - c) Relevant standards/specifications;
 - d) Stores records;
 - e) Test and Inspection records including a record of each identified (i.e. by serial number) component and item of equipment;

- f) Certificates of Release to Service;
- g) Outgoing Authorised Release Certificate/Airworthiness Approval Tag (JAA Form One).

3.15.1 Essential records shall not be destroyed without authorisation from the CAA.

4 Requirements for the Maintenance of Approval

- 4.1 The Organisation shall be maintained at the standard necessary to undertake the work for which it is Approved and the CAA shall, at all reasonable times, have access to the Organisation for the purpose of assessing the standard in use.
- 4.2 A proposed change of the Chief Executive shall be notified to the CAA in writing. The CAA may require the Organisation to supply further information in order to satisfy itself of the suitability of the official concerned insofar as it may affect the CAA Approval of the Organisation.
- 4.3 Changes in the persons nominated in accordance with 3.1 shall be notified to the CAA in writing for acceptance.
- 4.4 The Exposition required by 3.2 shall be reviewed periodically by the Organisation and any necessary amendments promulgated.
- 4.5 The Organisation shall consult the CAA if in any difficulty about the interpretation of the Requirements, associated procedures, or on any airworthiness matter which in their opinion involves new problems or techniques.
- 4.6 The CAA shall have the right to witness tests or inspections in any way associated with establishing airworthiness of an aircraft/engine part.
- 4.7 The CAA may revoke, suspend or vary the terms of Approval if the conditions required for Approval are not maintained.

Chapter A8-3 Overhaulers – Group B1

1 Introduction

An Organisation may be Approved to certify that overhauls, repairs, modifications, replacements, inspections and tests to aircraft, engines, items of equipment or components thereof have been carried out in conformity with acceptable standards/specifications and CAA requirements, subject to compliance with the procedures set out in this Chapter A8–3. The Approval, when granted, will apply to the whole Organisation headed by the Chief Executive.

2 Application

Form AD 457, copies of which may be obtained from the CAA Safety Regulation Group, shall be completed and returned to the same address.

3 Requirements for the Grant of Approval

3.1 The Applicant for Approval shall nominate the following persons:

- a) A senior person, or group of persons, whose functions will include co-ordination of all appropriate departments to ensure compliance with the relevant airworthiness requirements and the technical content of customers' orders insofar as airworthiness may be affected. Such person(s) shall be directly responsible to the Chief Executive;
- b) Departmental heads and other senior members of staff as appropriate to the class of work for which Approval is sought;
- c) Signatories to Approved Certificates, and Engine Inspection and Test Certificates (where appropriate).

3.2 The Applicant shall provide an Exposition (see Chapter A8–1 Appendix No.1) of the Organisation, including the following information:

- a) The terms of reference of senior technical personnel as applicable to activities under CAA Approval. Authority to negotiate directly with the CAA on specific subjects shall be defined;
- b) The associated chains of responsibility;
- c) The scope of the overhaul/repair facility together with information on essential inspection and test equipment;
- d) The procedures adopted for controlling matters directly affecting airworthiness, and other technical standards which may affect airworthiness including the Quality Control Surveillance system operated in respect of sub-contracted work where applicable (see paragraph 3.10);
- e) Where approval for the amendment of manuals has been granted (see Chapter A8–3 Supplement No. 1), the procedures for controlling such amendments and certifications;
- f) Where the Supplementary Rating 'Airline Spares Transfer' has been granted, the procedures adopted to ensure compliance with paragraph 3.12;

- g) Any further matters which the CAA decides are necessary arising from initial assessment or subsequent supervisory visits.
- 3.2.1 Unless otherwise notified, two copies of the Exposition and of all subsequent amendments shall be supplied to the CAA Safety Regulation Group, together with a copy of the distribution list.
- 3.3 The Organisation shall, in the opinion of the CAA, be such as to ensure that, in all matters affecting airworthiness, full and efficient co-ordination exists within departments and between related departments.
- 3.4 The Applicant shall satisfy the CAA that the persons nominated in accordance with 3.1 are capable and responsible persons and written evidence of their qualifications and experience shall be supplied. The Applicant shall also satisfy the CAA that such persons are conversant with CAA requirements and procedures insofar as they affect the particular matters for which they are responsible. The CAA shall be satisfied that the management of the Organisation will be conducted with due regard to the needs of airworthiness and the character of airworthiness requirements.
- 3.5 The staff in all appropriate technical departments shall be of sufficient number and experience as may reasonably be expected to undertake the volume of work in the class for which Approval is sought.
- 3.6 The staff shall be provided with adequate accommodation, facilities and equipment for the effective performance of their duties. Office, laboratory and workshop environmental conditions shall be controlled as necessary in relation to the work. Bonded and quarantine stores shall be provided.
- 3.7 The Organisation shall have facilities, or access to suitable Approved facilities, for making such tests as are necessary to establish compliance with acceptable standards/specifications and the Requirements. The calibration of test equipment shall be checked as frequently as is necessary to maintain confidence in the accuracy of the equipment.
- 3.8 Inspection stamps, of a type and design Approved by the CAA, shall be issued to inspectors for their individual use.
- 3.9 The Organisation shall hold and make available to staff, CAA publications, Approved manuals, specifications, data sheets and related literature appropriate to the class of work for which Approval is sought. Suitable arrangements shall be made to ensure that these documents are amended up to date.
- 3.10 A Quality Control and Assurance system shall be operated to the satisfaction of the CAA in respect of all products handled under the terms of CAA Approval. In addition, Quality Control Surveillance shall be exercised in respect of any work carried out for the Approved Organisation by an unapproved Organisation to ensure that the required standards of airworthiness are achieved (see A8-1, Appendix No. 2). Approved Organisations shall, as a condition of placing the order, arrange for the right of entry by the CAA to such an unapproved Organisation should the occasion arise. Placing of orders on an Organisation not Approved by the CAA is permissible only where the Approved Organisation possesses the full technical capability to verify conformance with acceptable Quality Standards.
- NOTE:** CAA Approved Organisations when undertaking work outside their terms of Approval are deemed to be unapproved.
- 3.10.1 An Organisation Approved as a supplier placing orders on an unapproved organisation shall satisfy itself that the origin of each item supplied is identified and satisfy itself that the item is acceptable and suitable for the intended purpose.

- 3.10.2 **Definitions.** The following definitions apply:
- a) **Quality.** The quality of a product is the degree to which it meets the requirements of the customer. With manufactured products quality is a combination of quality of design and quality of manufacture.
 - b) **Quality Control Surveillance.** Supervision by the Approved Organisation placing the order of the unapproved Organisation's Quality Control organisation and methods.
- 3.11 A Certificate of Release to Service (see A6-2 (B6-2)/A6-7 (B6-7)) shall be issued in respect of each overhaul, repair, replacement, modification or inspection. Where work is carried out on part of an aircraft or its equipment by an Organisation not handling the complete aircraft, a JAA Form One shall be issued to the consignee.
- 3.12 An Authorised Release Certificate/Airworthiness Approval Tag (JAA Form One), the form of which shall be Approved by the CAA, shall be issued to the consignee for all aircraft parts released under authority of the CAA (see A8-1, Appendix No. 3).
- NOTE:** The Authorised Release Certificate/Airworthiness Approval Tag (JAA Form One) constitutes the Certificate of Release to Service prescribed in 3.11 above.
- 3.13 Technical records shall be maintained and shall be such that proper correlation of all work carried out is established with relevant documents including the following, as appropriate:
- a) Customer's order;
 - b) Aircraft, engine or part;
 - c) Relevant standards/specifications;
 - d) Stores records;
 - e) Test and Inspection records including a record of each identified (i.e. by serial number) component and item of equipment;
 - f) Certificates of Release to Service;
 - g) Outgoing Authorised Release Certificate/Airworthiness Approval Tag (JAA Form One).
- 3.13.1 Essential records shall not be destroyed without authorisation from the CAA.

4 Requirements for the Maintenance of Approval

- 4.1 The Organisation shall be maintained at the standard necessary to undertake the work for which it is Approved and the CAA shall, at all reasonable times, have access to the Organisation for the purpose of assessing the standard in use.
- 4.2 A proposed change of the Chief Executive shall be notified to the CAA in writing. The CAA may require the Organisation to supply further information in order to satisfy itself of the suitability of the official concerned insofar as it may affect the CAA Approval of the Organisation.
- 4.3 Changes in the persons nominated in accordance with 3.1 shall be notified to the CAA in writing for acceptance.
- 4.4 The Exposition required by 3.2 shall be reviewed periodically by the Organisation and any necessary amendments promulgated.

- 4.5 The Organisation shall consult the CAA if in any difficulty about the interpretation of the Requirements, associated procedures, or on any airworthiness matter which in their opinion involves new problems or techniques.
- 4.6 The CAA shall have the right to witness tests or inspections in any way associated with establishing airworthiness of an aircraft, engine or any part thereof.
- 4.7 The CAA may revoke, suspend or vary the terms of Approval if the conditions required for Approval are not maintained.

Supplement 1 to A8-3 **Amendment of Maintenance, Overhaul and Repair Manuals and Wiring Diagrams**

1 Introduction

An Organisation approved as an Overhauler Group B1 in accordance with this Chapter A8-3, having the capability to carry out such work, may apply to have its terms of approval extended to include the initiation of amendment to Maintenance, Overhaul and Repair Manuals and Wiring Diagrams associated with the aircraft, engines, components and equipment specified in the Terms of Approval.

2 Facilities

An Organisation holding Group B1 Approval applying for an extension to its Terms of Approval to include the amendment to Manuals shall have adequate facilities and procedures for the preparation and substantiation of proposed amendments and a system for filing and recording the associated data and, where applicable, a system for promulgating the information.

3 Classification

- 3.1 Amendments to manuals and wiring diagrams are considered to be modifications and as such any proposed change must be submitted to the CAA Area Office for classification. The relevant procedures of Chapter A2-5 (B2-5) shall be observed.
- 3.2 The CAA, in deciding upon the classification, will consider the airworthiness implication, the degree of CAA involvement, and the effect on the basis of original certification or similar acceptance of the aircraft, component or system.
- 3.3 Due consideration will also be given to the technical expertise available within the Organisation to substantiate the amendment and whether or not reference should be made to the original manufacturer or similar source of specialised knowledge for guidance.
- 3.4 Amendments will be classified as Major or Minor. Notification of a Minor classification signifies CAA approval whereas notification of a Major classification will require Form AD 282 procedures to be followed (see A2-5 (B2-5), 2.2.1).

4 Types of Amendments

- 4.1 Amendments may only reflect the following:
 - a) Changes introduced by Service Bulletins, Service Letters, or similar documentation of UK or foreign origin, for which no Manual amendment have been issued by the manufacturer.
 - b) Modifications introduced by Design Organisations acceptable to the CAA, other than the original manufacturer.
 - c) Changes in methods and procedures of maintenance or overhaul tasks initiated by the Organisation.

- d) Minor modifications proposed by the Organisation and approved by the CAA.
- e) Changes or modifications associated with aircraft, engines, components and equipment specified in the Schedule of Approval.

- NOTES:**
- 1 Where the original manufacturer is extant, he should be required to agree the change or, at least, issue a statement of "no objections".
 - 2 In cases where the original manufacturer no longer exists, or can be shown to be unable or unwilling to respond, the CAA should be consulted and the judgement made that where the proposed change could have a marked effect on Airworthiness, there is sufficient evidence to determine that the effect will not be detrimental.

5 Procedure

Group B1 Overhaulers approved to amend associated manuals will be required to adopt the following procedures:

- a) All proposed amendments shall be submitted to the CAA supervising Area Office for classification;
- b) All pages forming part of the amendment shall be headed with the Organisation's name, title or other identification to avoid confusion with the original manual pages;
- c) An initial amendment to a particular manual or drawing shall have a separate, suitably titled amendment record sheet;
- d) Marginal lines shall be used to identify text material which differs from the original manual;
- e) All amendments shall be certified by the Organisation's Quality Manager or Chief Inspector (see Chapter A5-3, paragraph 5 (Chapter B5-3, paragraph 4));
- f) All amendments subsequently issued by the original publisher of the manual shall be checked for their effect on the Organisation's amended pages.

Supplement 2 to A8-3 Approval of Organisations to Recommend Certificate of Airworthiness Renewal for Aeroplanes & Rotorcraft above 2730 kg MTWA

1 Introduction

1.1 The requirements of this Chapter A8-3 – Supplement No. 2 are applicable to the Approval of Organisations to make reports to the CAA in respect of the functions specified in paragraph 1.2, in respect of aeroplanes and rotorcraft the Maximum Total Weight Authorised of which are greater than 2730 kg. This Approval is supplemental to existing Commission Regulation (EC) 2042/2003 Part M, Part 145 or BCAR A8 maintenance Approvals, in accordance with the limitations of the Approval.

1.2 An Organisation may, subject to compliance with the requirements of this Chapter A8-3 – Supplement No. 2, be Approved in respect of aeroplanes and rotorcraft certificated in the Transport, Aerial Work or Private Category, to undertake assessments and to make recommendations to the CAA in respect of the renewal of Certificates of Airworthiness in accordance with Chapter A3-4 (B3-4).

NOTE: All work undertaken in connection with the renewal of the Certificate of Airworthiness shall be supervised by an Organisation Approved for the purpose.

2 Application

2.1 Application for Approval shall be made on Forms AD456 and AD458, copies of which may be obtained from the CAA Safety Regulation Group, Applications and Approvals Department, 2E Aviation House, Gatwick Airport South, West Sussex RH6 0YR which when completed in duplicate should be returned to the same address.

3 Grant of Approval

3.1 Personnel

3.1.1 The Applicant shall nominate for CAA acceptance, personnel specifically for the purposes of paragraph 1.2 in accordance with this paragraph 3.1.1.

The nominated persons should comply with a) to e):

- a) i) Be the holder of a current United Kingdom Aircraft Maintenance Engineer's Licence Without Type Rating valid in at least two Categories in the appropriate Sub-divisions (other than Category 'X' Compasses); or
- ii) be the holder of an appropriate Part 66 B1, B2 or C Licence

NOTE: In respect of authorisation for rotorcraft certifications. Categories 'A' and 'C' may be considered as separate Categories.

- b) Have at least eight years' experience of aircraft maintenance, which includes at least two years' recent experience involving the Certification of Maintenance;

- c) Hold a position within the Approved Organisation compatible with the responsibilities involved;
- d) Have successfully completed familiarisation training on the aircraft type for which the Authorisation is to be granted;
- e) Have been trained in the procedures of the Organisation;
- f) In cases of non-compliance with any of the provisions of a) to e), the Applicant shall satisfy the CAA that the nominated persons provide an equivalent level of confidence.

- NOTES:**
- (1) More than one such person may be nominated.
 - (2) The CAA form AD458 shall be used to nominate these personnel who must additionally be included in the Organisation's Exposition (see paragraph 3.2).
 - (3) For personnel involved with Airworthiness Flight Testing, including the evaluation, see Chapter A3-5 (B3-5).

3.1.2 In some instances, Categories X and R certifications may be made by personnel not permanently employed by the Organisation, providing that the Applicant can satisfy the CAA that acceptable arrangements exist between the person and the Organisation.

3.1.3 The Applicant shall satisfy the CAA that licensed, authorised and unlicensed staff are of sufficient numbers and are so experienced that they may reasonably be expected to undertake the volume and type of work appropriate to the recommendations to be made.

3.2 **Organisation and Procedures**

3.2.1 The Applicant shall have a Company Exposition which meets the requirements of Commission Regulation (EC) 2042/2003 Part M, Part 145 or BCAR A8 and shall additionally include procedures specifying how the following will be achieved:

- a) C of A renewal application and recommendation;
- b) Audit of Flight Manual contents;
- c) Confirmation of mandatory modifications, ADs and inspection status;
- d) Audit of aircraft records;
- e) Conformity with CAA Approved Maintenance Schedule;
- f) Status of aircraft weight and balance data;
- g) Conformity with CAA Approved aircraft radio installation (CAA Form AC968NR);
- h) Compliance with CAA Airworthiness Flight Test requirements;
- i) Review of outstanding allowable deferred defects;
- j) Physical survey of aircraft not more than thirty days prior to renewal recommendation to be completed in accordance with the Approved company aircraft survey procedure;
- k) Confirmation and acceptance of signatories for CAA Form AD202NR;
- l) Completion of CAA Form AD202NR and submission to CAA with the associated supporting documentation;
- m) Quality Audit;

- n) Ensure that aircraft types or groups for which this Supplementary Approval has been granted are valid;
 - o) Preservation and correlation of technical records to ensure traceability.
- 3.2.2 The Organisation shall in the opinion of the CAA be such as to ensure that, in all matters affecting airworthiness full and efficient co-ordination exists between individual licensed aircraft maintenance engineers, authorised engineers and other members of the staff.
- 3.3 Publications and Information**
- 3.3.1 The Organisation shall make available to the staff concerned the necessary technical data, e.g. CAA publications, Approved manuals, specifications, data sheets and related literature appropriate to the class of work for which Approval is sought.
- a) The technical data shall consist of that issued from the manufacturers by way of maintenance manuals, micro film, service bulletins and other forms of continuing airworthiness information.
 - b) Written agreements shall be made by the Organisation with the appropriate manufacturers, or other recognised suppliers, for the supply of amendments to the necessary publications. A suitable system for amendment control shall be provided.
 - c) It shall be the responsibility of the user to ensure that the documents and technical data concerned are amended and up to date.

4 Continuation of Supplementary Approval

- 4.1 Changes of personnel nominated in accordance with paragraph 3.1.1 shall be notified to the CAA in writing for acceptance.
- 4.2 The CAA may revoke, suspend or vary the Terms of the Supplementary Approval if the conditions prescribed for Approval are not maintained.

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Chapter A8-6 Test Houses – Group B4

1 Introduction

An Organisation may be Approved to provide reports and certify that test/examinations on an aircraft, engine, or related part, system, or material have been made in compliance with requirements or specifications published or accepted by the CAA, subject to the procedures set out in this Chapter A8–6. The Approval, when granted, will apply to the whole Organisation headed by the Chief Executive.

2 Application

Form AD 457, copies of which may be obtained from the CAA Safety Regulation Group, shall be completed and returned to the same address.

3 Requirements for the Grant of Approval

3.1 The Applicant for approval shall nominate the following persons:

- a) The person in direct charge of the test house and, where applicable, a deputy;
- b) The technical director or senior executive to whom the person directly in charge of the test house is responsible;
- c) Other senior members of the test house staff and of related departments;
- d) Signatories to Approved Test Certificates.

3.2 The Applicant shall provide an Exposition (see A8–1 Appendix No.1) of the Organisation, including the following information:

- a) The terms of reference of senior technical personnel, as applicable to activities under CAA Approval;
- b) The associated chains of responsibility;
- c) The scope of the test house facility, together with information on essential inspection and test equipment;
- d) The procedures adopted for conducting tests/examinations, and reporting thereon;
- e) Any further matters which the CAA decides are necessary arising from initial assessment or subsequent supervisory visits.

3.2.1 Two copies of the exposition and of all subsequent amendments shall be supplied to the CAA Safety Regulation Group, together with a copy of the distribution list. The Applicant will be notified when the CAA requires more than two copies of the Exposition.

3.3 The Organisation shall, in the opinion of the CAA, be such as to ensure that, in all matters affecting airworthiness, full and efficient co-ordination exists within the test house, and between the test house and other departments of the company.

3.4 The Applicant shall satisfy the CAA that the person in charge of the test house and his accredited deputy are capable and responsible persons, and written evidence of their qualifications and experience shall be supplied. The CAA shall be satisfied that the management of the Organisation will be conducted with due regard to the needs

of airworthiness and the character of airworthiness requirements, and that the persons nominated in accordance with paragraph 3.1 are conversant with CAA requirements and procedures insofar as they affect the particular matters for which they are responsible.

- 3.5 The test house staff shall be of sufficient number and experience as may reasonably be expected to undertake the volume of work in the class for which approval is sought.
- 3.6 The test house staff shall be provided with adequate accommodation, facilities and equipment for the effective performance of their duties. The calibration of test equipment shall be checked as frequently as is necessary to maintain confidence in the accuracy of the equipment, and the laboratory or test house environmental conditions shall be controlled as necessary in relation to the work. Bonded and quarantine stores shall be provided, where appropriate.
- 3.7 An Approved Certificate, the form of which shall be approved by the CAA, shall be issued to the consignee for each item tested or examined and released under the CAA approval. Approved Certificates shall be numbered serially at the time of bulk printing, except as otherwise agreed by the CAA. The wording of the certification shall be as follows:

Certified that the above mentioned specimens/parts/materials/systems* have been tested/examined in accordance with the terms of the contract/order applicable thereto and the requirements of the Civil Aviation Authority relating to the testing of such specimens/parts/materials/systems*. This Certificate does not relate to the standard or quality of manufacture of the item/material except as may be specified in the test contract/order.

Signed

for and on behalf of

Date

***Delete where inapplicable.**

- 3.8 Test house records shall be maintained and shall be such that proper correlation of all work carried out is established with relevant documents including the following, as appropriate:
- a) Customer's order;
 - b) Item under Test/Examination;
 - c) Relevant standards/specifications;
 - d) Test Report including a record of each identified (i.e. by serial number) component and item of equipment;
 - e) Outgoing Approved Test Certificate.
- 3.8.1 Suitable arrangements shall be made for checking and supervising test results and recordings. Essential records shall not be destroyed without authorisation from the CAA.

4 Requirements for the Maintenance of Approval

- 4.1 The Organisation shall be maintained at the standard necessary to undertake the work for which it is approved and the CAA shall, at all reasonable times, have access to the Organisation for the purpose of assessing the standard in use.
- 4.2 A proposed change of the Chief Executive shall be notified to the CAA in writing. The CAA may require the Organisation to supply further information in order to satisfy itself of the suitability of the official concerned insofar as it may affect the CAA Approval of the Organisation.
- 4.3 Changes in the persons nominated in accordance with 3.1 shall be notified to the CAA in writing for acceptance.
- 4.4 The Exposition required by 3.2 shall be reviewed periodically by the Organisation and any necessary amendments promulgated.
- 4.5 The Organisation shall consult the CAA if in any difficulty about the interpretation of the Requirements or associated procedures.
- 4.6 The CAA shall have the right to witness tests in any way associated with establishing airworthiness.
- 4.7 The CAA may revoke, suspend or vary the Terms of Approval if, in the opinion of the CAA, the conditions required for approval are not maintained.

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Chapter A8-8 Design Organisations – Group E1, E2 and E3

1 Introduction

- 1.1 An Organisation may be approved to provide reports and certify that the design of an aircraft, equipment or any part thereof or modification or repair scheme complies with CAA requirements, and in particular cases with such other requirements as the CAA may consider appropriate, subject to compliance with the procedures set out in this Chapter A8–8. The approval, when granted, will apply to the whole organisation headed by the Chief Executive.
- 1.2 Approvals under the provisions of this Chapter may fall into one or more of the following groups:
- a) **E1** Organisations approved to provide reports and certify that the original design of an aircraft, or equipment or any part thereof, and any subsequent modifications and repairs are such as to comply with CAA Design requirements. The approval includes authority to certify design-originated documentation associated with operation, maintenance, overhaul, or repair of the product.
 - b) **E2** Organisations approved to provide reports and certify that the design of modifications or repairs to an existing aircraft or equipment (i.e. originated by another organisation), or any part thereof, is such as to comply with CAA Design requirements. The approval may include authority to certify any necessary changes to design originated documentation associated with maintenance, overhaul, or repair of the modified product.
 - c) **E3** Organisations approved to provide reports and to certify that a particular aircraft conforms to a standard approved by the CAA, for the issue of a Certificate of Airworthiness, for that aircraft type, or, differs in a defined manner from that approved standard.

- NOTES:**
- (1) The reports regarding the condition of an aircraft shall reflect the information detailed in the Appendix No 1 to this Chapter and include a declaration that, apart from any exceptions stated, compliance with the approved standard has been established.
 - (2) The CAA recognises that categories E1 to E3 cover a wide range of activities that may require significant organisational resources. Thus, while it is believed that the principles of this chapter are applicable, flexibility will be used in interpreting these requirements in relation to the class of activity for which approval is sought. In particular, for Approvals under Sub-Group E3 only, it is recognised that an organisation does not need the capability for original design work.
 - (3) The terms of the approval granted will define the scope and capability of the organisation and specify the reports that may be made.
 - (4) Each approval group is discrete such that, for example, an E1 approval does not include E2 or E3 privileges.

2 Application

AD Form 457, copies of which may be obtained from the CAA Safety Regulation Group, shall be completed and returned to the same address.

3 Requirements for the Grant of Approval

- 3.1 The Organisation shall, in the opinion of the CAA, be such as to ensure that, in all matters affecting airworthiness, full and efficient co-ordination exists within the design office and related technical and administrative departments, and between the design office and any recognised sub-contractors.
- 3.2 The qualifications and experience of the design office staff shall, in the opinion of the CAA, be adequate to conduct the work involved in establishing compliance with the Requirements, and shall be such as to ensure that good judgment is exercised with a full appreciation of current aeronautical practice in design matters, whether or not specifically covered by requirements. The CAA shall be satisfied that the management of the Organisation will be conducted with due regard to the needs of airworthiness and the character of airworthiness requirements, as appropriate to the class of work to be undertaken under the Terms of Approval.
- 3.3 The design organisation staff shall be of sufficient number as may reasonably be expected to undertake the airworthiness investigation of the volume of work in the class for which approval is sought. The staff shall include (as applicable) specialists qualified in all branches of aeronautics, and authors, technical writers/editors for the preparation of manuals, it shall be demonstrated that satisfactory formal arrangements exist by which adequate access to such necessary specialist expertise is available for the purpose of conducting work under the authority of the Organisation's design office.
- NOTE:** For an E3 Organisation the staff shall include specialists in relevant branches of maintenance and airworthiness, including technical services staff. There shall be suitable arrangements for an inspection of the aircraft to establish compliance with the documented airworthiness standard.
- 3.4 The Applicant for approval shall nominate the following persons:
- The person in direct charge of the design organisation;
 - The technical director or senior executive to whom the person directly in charge of the design organisation is responsible;
 - Other senior members of the design organisation and of related departments;
 - Signatories to Design Certificates and Declarations and Reports.
- 3.5 The Applicant shall provide an Exposition (see A8-1 Appendix No.1) of the Organisation, including the following information:
- The terms of reference of senior personnel, as applicable to activities under CAA Approval;
 - The associated chains of responsibility;
 - The scope of the design office facility, together with information on essential procedures, test equipment and records;
 - The procedures adopted for conducting inspections, tests, examinations. For an Organisation holding Group E3 Approval, procedures should define any sub-contract arrangements that may be in place with organisations performing aircraft inspections;
 - Any further matters which the CAA decides are necessary arising from initial assessment or subsequent supervisory visits;
 - The arrangements by which work may be undertaken on behalf of the organisation;

- g) For approvals in Group E1 and E2, procedures for the recording of the required particulars in the Civil Modification Record required by BCAR Section A Chapter A2-5;
- h) For approvals in Group E3, procedures for recording particulars to satisfy paragraph 3.10 for reports or certificates issued under the approval.
- 3.5.1 Two copies of the Exposition and of all subsequent amendments shall be supplied to the CAA Safety Regulation Group, together with a copy of the distribution list. The Applicant will be notified when the CAA requires more than two copies of the Exposition. The following paragraphs 3.6 to 3.9 inclusive are not applicable to organisations for Approval under Sub-Group E3.
- 3.6 The design office shall be so organised that, unless otherwise agreed by the CAA, all assumptions, calculations, drawings and reports on which airworthiness depends are subject to verification. Such verification shall involve checking by a person other than the one who did the original work and may take the form of suitable tests ensuring the basic accuracy of the calculations and drawings.
- 3.7 The Organisation shall have facilities, or access to suitable approved facilities, for making such tests as are necessary to establish compliance with the Requirements. The calibration of test equipment shall be checked as frequently as is necessary to maintain confidence in the accuracy of the equipment.
- 3.8 The Applicant shall have facilities, or access to suitable approved facilities, for producing and publishing the appropriate technical information required for the safe operation, maintenance, overhaul and repair of the items for which the Organisation is approved and, where applicable, the arrangements shall include notification, by documents such as Service Bulletins, of mandatory modifications and inspections. The manufacturer or owner of the aircraft shall be provided with such information.
- 3.9 Design records shall be such as to provide substantiation of, and proper correlation between, all the data comprising the design. The method used shall be such as to make possible the provision of the necessary design information of any product on which the airworthiness of an aircraft may depend as long as the product may be in service, and until such time after as may be agreed by the CAA.
- 3.10 For Organisations approved under Group E3, the records of technical investigations performed under the approval shall be such as to provide proper correlation with the aircraft Technical Records and an adequate record of the basis and substantiation of the reports and/or Certificates of Design Conformity issued. (An example of the format of such a report is given in Appendix 1 to this Chapter.)

4 Requirements for the Maintenance of Approval

- 4.1 The Organisation shall be maintained at the standard necessary to undertake the work for which it is approved and the CAA shall, at all reasonable times, have access to the organisation for the purpose of assessing the standard in use.
- 4.2 A proposed change of the Chief Executive shall be notified to the CAA in writing. The CAA may require the Organisation to supply further information in order to satisfy itself of the suitability of the official concerned insofar as it may affect the CAA approval of the Organisation.
- 4.3 Changes in the persons nominated in accordance with paragraph 3.4 shall be notified to the CAA in writing. Such changes require CAA approval.

- 4.4 The Exposition required by paragraph 3.5 shall be reviewed periodically by the Organisation and any necessary amendments promulgated.
- 4.5 The Organisation shall consult the CAA if in any difficulty about the interpretation of the Requirements, associated procedures or on any airworthiness matter which in their opinion involves new problems or techniques.
- 4.6 At all reasonable times CAA representatives shall have access to all drawings, calculations, reports and records relating directly to the airworthiness of an aircraft, engine, or any part thereof. The CAA shall have the right to witness tests or inspections in any way associated with establishing airworthiness of an aircraft, engine, or any part thereof. The Organisation shall keep the CAA representatives fully informed of all defects, incidents and problems which arise during inspection, design and development and which could have a significant bearing on airworthiness.
- 4.7 For Organisations approved under groups E1 and E2, if, subsequent to approval of an aircraft, engine or part, the organisation becomes aware of defects which affect the continuing airworthiness of the product, the CAA shall be advised in order that the appropriate joint action may be taken. Such advice shall be given to the CAA irrespective of the country of registration of the aircraft or whether the defect occurs in the United Kingdom or overseas.
- 4.8 The CAA may withdraw, suspend or vary the terms of approval if, in the opinion of the CAA, the conditions required for approval are not maintained. The terms of approval may also be varied as a result of changes in the company's undertakings or facilities.

5 Certification

- 5.1 Groups E1 or E2 Approved Organisations may issue a Certificate of Design, signed by an approved signatory of the particular Organisation, and worded in the form set out in BCAR Chapter A2-5/A2-4 for UK manufactured aircraft and Section B Chapter B2-5/B2-5 for foreign manufactured aircraft.
- 5.2 Group E3 Approved Organisations may issue a Certificate of Design Conformity signed by an approved signatory of the particular Organisations and worded as detailed in Appendix 1 to this Chapter.

CERTIFICATE OF DESIGN CONFORMITY

Aircraft Designation

Registration Marks

Manufacturer's Serial Number of Aircraft

Certificate of Airworthiness Categories

.....

.....

Performance Group

Engine(s) Type

I hereby certify that, except for the differences detailed below, the design standard of the above aircraft conforms to the CAA certificated type design standard.

Modification(s)

.....

.....

Exceptions

.....

.....

Signed

Organisation

CAA Approval Ref. No.

Date

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Appendix 1 to A8-8 Guidance Material for E3 Organisations on the Production of the Aircraft Report, for Imported Used Aircraft

This Appendix provides guidance in complying with the requirements of BCAR A8-8 paragraph 3.10.

1 Introduction

1.1 Purpose of the Aircraft Report

"A series aircraft is an aircraft, including engines and equipment, the design of which is similar in every essential respect to the design of an aircraft for which a United Kingdom Certificate of Airworthiness has previously been issued". (Reference Chapter A3-2, paragraph 1.3). Such an aircraft is eligible for a Certificate of Airworthiness. A series modified aircraft, is an aircraft that incorporates modifications or repairs classified as Major, relative to the UK certified aircraft build standard, that require CAA approval for the issue of a Certificate of Airworthiness.

The Aircraft Report will **assist** the E3 organisation in recording the CAA approval status of the aircraft build standard, and hence in substantiating to CAA a series or series modified classification for the aircraft according to the above definitions. It will also **assist** the organisation in recording details on the Continued Airworthiness of the aircraft and the Inspection of the aircraft, and hence in providing to CAA a Certificate of Design Conformity for series aircraft.

The report will propose and substantiate the series/series modified classification, and will assist the CAA when conducting an appropriate survey of the aircraft and its records, for the purposes of issuing a Certificate of Airworthiness.

- NOTES:**
- 1) Reference to 'aircraft' herein, includes its engines, APU, transmission, propellers, systems and equipment, etc., (as applicable), and its documentation, including its records, logs, maintenance documents, and operational documents, etc.
 - 2) The 'series/series modified' classification must also be declared on the CA3 Application Form.

1.2 Form and Content of the Aircraft Report

The information that follows this introduction provides guidance for the layout and content of the Aircraft Report.

NOTE: This should not be considered as a definitive check list of the issues to be addressed during the E3 organisation investigations.

1.3 Development of the Aircraft Report

In order for the E3 organisation to propose whether the aircraft is series or series modified, it must determine the CAA approval status of the aircraft build standard. This can be achieved by identifying whether any modifications or repairs have been embodied relative to the CAA certified aircraft build standard. Details on the CAA certified aircraft build standard can be found in the associated Airworthiness Approval Notes (AANs) which are recorded in the CAA AAN Data Base. The repairs should be

considered against Airworthiness Information Leaflet (AIL) 0180 which provides guidance for identifying any repairs that require CAA approval.

When this process is complete, the E3 organisation may then propose a series/series modified classification and provide the report to CAA for agreement.

Details on the Continued Airworthiness of the aircraft and the inspection of the aircraft should be incorporated in section B of the report, which can be provided to CAA at a later stage if necessary.

The Certificate of Design Conformity should be provided to CAA for series aircraft in the final report, when the E3 organisation has completed its investigations.

- NOTES:**
- 1 The report should address the powerplant, APU, transmission, and propellers, in addition to the airframe, systems, and equipment.
 - 2 Modifications may include Additional Requirement for Import or Additional National Design Requirements (ARI/ANDRs) embodied during build.
 - 3 The aircraft inspection should confirm that the aircraft build standard conforms with its documented build standard.
 - 4 The report will be considered to be part of the inspection records, and as such must not be destroyed unless authorised by the CAA. Reference BCAR Chapter A3-2 paragraph 8.3.

1.4 **Promulgation of the Aircraft Report to CAA**

The report should be provided to the Aircraft Certification Section in the Aircraft Projects Department, to enable the series/series modified classification to be agreed. The report should also be provided to the applicable Regional Office responsible for the issue of the Certificate of Airworthiness.

2 Aircraft Report

This section provides guidance on the expected format and content of the aircraft report, as follows:

Aircraft Report

Organisation:..... **Approval Reference:**.....
Aircraft Report Reference:.....**Issue:**.....
Airworthiness Approval Note Number:..... **Aircraft Registration:**.....
Applicant :.....(**Application Form CA3 dated:**.....)

Section B of the Aircraft Report is included/will follow. (Delete as applicable.)

Report Title:.....

Report Summary:.....

Author:.....

Approved:.....

Date:.....

Date:.....

Aircraft Report - Contents

Introduction

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Attachment 2: Certificate of Design Conformity.

Introduction

This section should include:

- A brief statement outlining the objectives of the report.
- The current Type Certificate Holders.
- The aircraft manufacturer.
- The countries in which the aircraft has previously been registered along with the Certificate of Airworthiness category under which it operated.
- Basic aircraft details as follows:

Aircraft Type:**Manufacturer's Serial Number:**

Engine Type:**Manufacturer's Serial Number:**

APU Type:**Manufacturer's Serial Number:**

Propeller Type:**Manufacturer's Serial Number:**

Certificate of Airworthiness Categories:

Performance Group:

Section A: CAA Approval Status of the Aircraft Build Standard

1 Build Standard

1.1 General

This section should include:

- a) A reference to the UK Type Certificate Data Sheet numbers (Airframe, Engine and Propeller as applicable).
- b) The Airworthiness Approval Note (AAN) number under which the Aircraft Type was certified.
- c) The AAN number for the issue of a Certificate of Airworthiness, to which the imported aircraft is being compared.

1.2 CAA Additional Requirements for Validated Aircraft

CAA ARIs are specified in CAP 480 for compliance with the requirements for Type Certification, Certificate of Airworthiness, and Operational Approval. This paragraph should incorporate a statement against the applicable ARIs for Type Certification and the Certificate of Airworthiness. The statements should identify how compliance with each of the ARIs has been achieved. When a previously CAA approved modification is embodied as the means of compliance with an ARI, the modification title, number, and CAA approval reference should be included in the statement. If a modification which is not CAA approved is embodied as the means of compliance with the ARI, the modification should be referenced in the statement and addressed in paragraph 2 below.

1.3 JAA Additional Requirements for Validated Aircraft

Compliance with the JAA Type Certification build standard will need to be established for JAA validated aircraft types. If the aircraft was not built to the JAA type certification build standard, then compliance with the JAA Additional Requirements for Type Certification will need to be shown. JAA Additional Requirements for Type Certification are not currently published, so this information should be obtained from the CAA Design Liaison Surveyor for the type.

Additional National Requirements (ANRs) are published in the JAA Administration and Guidance Material (Section 3, Part 4, Registers). The JAA Type Certification build standard will comply with ANRs for Type Certification. However, a statement against each applicable ANR for the issuance of a UK Certificate of Airworthiness will need to be made. When a previously CAA approved modification is embodied as the means of compliance with an associated ANR, the modification title, number, and CAA approval reference should be included in the statement. If a modification which is not CAA approved is embodied as the means of compliance with the ANR, the modification should be referenced in the statement and addressed in paragraph 2.

NOTE: Confirmation of compliance with the UK Airworthiness Notices, as specified in the ARIs/ANRs, can be provided in section B paragraph 5 of the report.

2 Modifications relative to the CAA Certified Build Standard

This section should provide details on each modification, including minor modifications, which should include the following, as applicable. The modification information should include the CAA approval reference, and identify those

modifications that require CAA approval. Details of CAA approved modifications may be provided in an appendix to the report if necessary:

- The modification title.
- The modification design organisation.
- The modification installation organisation *.
- The modification reference number or Service Bulletin number.
- A brief description of the modification *.
- The CAA approval reference, e.g. CAA AAN number or Service Bulletin number, under which the modification was approved.
- The Foreign National Airworthiness Authority that approved the modification, and their approval reference, e.g. FAA Supplemental Type Certificate number, or Field Approval eg FAA DER Form 8110-3, etc *.
- The modification classification minor/major (as agreed with the CAA).
- The Flight Manual Supplement reference.
- Any additional limitations introduced which compensate for a partial non-compliance with a requirement.
- Any additional maintenance actions required for the modification.

* Only for modifications which require CAA approval.

NOTE: Modifications can only be classified as being either Major or Minor by an appropriately approved E1 or E2 design organisation.

3 Repairs relative to the CAA Certified Build Standard

This should include details on each major repair to the aircraft, which should include the following, as applicable. Repairs requiring CAA approval should be clearly identified. Details of approved repairs may be provided in an appendix to the report if necessary:

- The repair title.
- The repair design organisation.
- The repair installation organisation *.
- The repair reference.
- The CAA basis of approval (Refer to AIL 180).
- Affect on any life limitations.
- Affect on inspections or their frequencies.

* Only for repairs which require CAA approval.

NOTE: Repairs can only be classified as being either Major or Minor by an appropriately approved E1 or E2 design organisation.

4 Equipment Fit

This section should include a list of any equipment that is not CAA approved along with their associated foreign approval references, e.g. TSO. Refer also to section B

paragraph 3 b). If the installation of the equipment has not been approved by the CAA, this should be addressed in section A paragraph number 2.

5 Flight Manual

This section should specify the reference and revision status of the Aircraft Flight Manual (AFM). The Temporary Revisions, applicable Supplement(s) and Change Sheet(s) (Design Organisation and CAA), must also be referenced.

NOTE: The AFM must reflect the build standard of the aircraft

6 Summary List of Deviations and Variations

This section should contain a summary list of deviations from the design certification requirements, if any. The list should specify the method of acceptance, for example, acceptance based upon equivalent safety findings approved by CAA. Where a temporary variation has been granted against a certification requirement, the period for which the variation remains valid should be stated.

Section B: Continued Airworthiness

This section should incorporate details on how the following subjects have been addressed:

1 Maintenance Schedule

As an aircraft in respect of which a C of A is in force, shall not fly unless the aircraft is maintained in accordance with an approved Maintenance Schedule, the Applicant may elect to provide the following information in the report:

- a) A Maintenance Schedule alignment check undertaken as agreed with CAA.
- b) All components with life limitations must be identified and cross referenced to the source document. The overhaul/service life remaining for each component or Out of Phase Inspection, including Certified Maintenance Requirements (CMR one star * or two star ** items) must also be established.

2 Airworthiness Limitations

Compliance must be established with the airworthiness limitations that are specified or referenced by the Aircraft, Engine, or Propeller Type Certificate Data Sheets. Airworthiness Limitations may include specific inspections and maximum retirement lives.

3 Air Navigation Order

All the certification requirements applicable to the issue of the Certificate of Airworthiness must be complied with, and in particular the following;

- a) The aircraft must be weighed and a weight schedule raised.
- b) A list of applicable equipment must be provided including radio equipment as required, along with the respective CAA/JAA type approval reference.
- c) Separate log books, acceptable to the CAA, must be provided for the aircraft, engines and VP propellers.
- d) Placards and Markings required by the ANO must be affixed and displayed in appropriate locations.

4 Airworthiness Directives

This section should incorporate a list of all applicable Airworthiness Directives promulgated by the State of Design and CAA Additional Airworthiness Directives, with respect to the Aircraft, Engines and Equipment, as required under AN 36. Conformation and method of compliance shall be stated in each case. If an Airworthiness Directive has not been complied with, a justification for acceptance should be provided (e.g. short term compensating factors). Where an Airworthiness Directive has been complied with by using an alternative means of compliance, the approval of such methods must be referenced. Where appropriate, the periodicity for initial and repetitive inspections, with respect to the applicable Calendar/Flt Hours/ Cycle limits should also be stated.

5 UK Airworthiness Notices

This section should incorporate a statement against each applicable Airworthiness Notice describing how compliance with the notice has been achieved. If a previously CAA approved modification is embodied as the means of compliance with an Airworthiness Notice, the modification title and number and CAA approval reference should be included in the statement. If compliance is achieved by embodying a modification that is not CAA approved, the modification should be referenced in the statement and addressed in Section A paragraph number 2.

6 Aircraft Inspection

This section should include a reference to the inspection report(s) conducted in accordance with Chapter A8-8 paragraph 1.2.

7 Series Flight Test

This section should incorporate the Series Flight Test Schedule and Report references.

8 Continued Airworthiness

This section should incorporate details of the design organisations that are responsible for the continued airworthiness of any major modifications installed in the aircraft that are not the responsibility of the TC holder.

Section C: Conclusions

This section should provide the conclusions of the assessment. If only section A of the report is provided in the first instance, this section can provide the conclusions of the assessments performed for section A.

Aircraft Report: Attachment 1

E3 Proposed Series/Series Modified Classification:

I have assessed the above aircraft and have established that it is Series /Series Modified (Delete as applicable) to the following aircraft, as detailed in Section A of the report:

Registration:..... **Serial No:****AAN No:**.....

Name:..... **Signature:** **Date:**.....

CAA Response to E3 Proposed Classification

The CAA agrees/disagrees to the proposed series/series modified classification (Delete as applicable):

Name:..... **Signature :**..... **Date:**.....

Return to: E3 Organisation
Copy to: The appropriate CAA Regional Office
The CAA Applications and Certification Department

Aircraft Report: Attachment 2

E3 Certificate of Design Conformity to the CAA Approved Airworthiness Standards:

I hereby Certify that, apart from the exceptions detailed below, the airworthiness standard of the above aircraft conforms to the applicable CAA airworthiness standards, as detailed in this report:

Name:..... **Signature :**..... **Date:**.....

Exceptions:

INTENTIONALLY LEFT BLANK

Chapter A8-9 Approval of Organisations for Flight under 'B' Conditions – Group F1, F3 and F4

1 Introduction

- 1.1 An Organisation approved to this Chapter may operate aircraft under 'B' Conditions, as prescribed in Schedule 3 of the Air Navigation Order, subject to any conditions specified by the CAA in such approval. The aircraft may fly without a Certificate of Airworthiness or Permit to Fly being in force; the aircraft may fly without being registered.
- 1.2 Approvals under the provision of this Chapter are granted in one or more of the following groups:
- a) **F1.** An approval granted to an Organisation approved for the full management and control of flights under 'B' Conditions;
 - b) Reserved;
 - c) **F3.** An approval granted to an Organisation for the management and control of flights under 'B' Conditions for the purposes of a specified test or development programme of defined scope and specified duration;
 - d) **F4.** An approval granted to an Organisation for the management and control of flights under 'B' Conditions for the purposes of a specified test or development programme of defined scope and specified duration, where the Applicant determines and the CAA agrees that there are no significant flight safety implications.
- 1.3 Each approval group is discrete such that, for example, an F1 approval does not include F3 or F4 privileges. It is possible however, for an Organisation to be approved in more than one group.
- 1.4 The Schedule of Approval may restrict the Organisation to a limited scope, aircraft category, or specific aircraft dependent upon the flight test expertise retained and the relative complexity of the projects undertaken.

2 Application

With the exception of Group F4, application for approval under this Chapter must be made on Form AD457 or AD456, copies of which may be obtained from the CAA Safety Regulation Group. Application for F4 approval must be made using Form ADF400.

3 Requirements for Grant of Approval

- 3.1 **Group F1** approval may only be granted to an Organisation, which meets the requirements of this Chapter and holds an approval in either group A1 in accordance with the requirements of Chapter A8-1, or groups E1 and A2, or groups E2 and A2 in accordance with the requirements of Chapters A8-8 and A8-2 respectively. Approvals granted under Part 21 may be accepted in lieu of a BCAR approval. The Organisation shall provide an Exposition containing the particulars identified in Appendix 1 to this

Chapter A8–9. The Organisation shall, in the opinion of the CAA, be such as to ensure that, in all matters affecting airworthiness and flight testing, full and efficient co-ordination exists within departments and between related departments.

3.2 **Group F3** approval may only be granted to an Organisation which meets the Requirements of this Chapter A8–9 and holds an approval in either group A1 in accordance with the requirements of A8–1, or groups E1 or E2 in accordance with the requirements of A8–8. Approvals granted under Part 21 may be accepted in lieu of a BCAR approval. The Organisation shall provide an Exposition containing the particulars identified in Appendix 2 to this Chapter A8–9, as necessary to the proposed task, and detailing how the interfaces between the flight test, design and quality management functions are managed by the Organisation who will be the F3 approval holder. The duration of the approval will not normally exceed 12 months and will be cancelled on completion of the programme. The Organisation shall, in the opinion of the CAA, be such as to ensure that, in all matters affecting airworthiness and flight testing, full and efficient co-ordination exists within departments and between related departments.

3.3 **Group F4** approval may only be granted to an Organisation, which meets the requirements of this Chapter A8–9. There shall be a substantiation of, and proper correlation between, all the data comprising the design; this shall be at least sufficient to allow a determination to be made that there are no significant flight safety implications. The Organisation shall provide a compliance and control statement containing the particulars identified in Appendix 3 to this Chapter A8–9. The duration of the approval will not normally exceed 3 months and will be cancelled on completion of the programme. The Organisation shall satisfy the CAA that full and efficient co-ordination exists between the persons identified under paragraph 3.5.2 of this Chapter A8–9, and that they understand their roles and responsibilities.

3.4 **General Requirements**

3.4.1 **Elements of Approval**

Any approval to conduct flights under 'B' Conditions requires the availability of suitable and appropriately approved personnel, facilities and procedures for the control of the principal aspects of flight under 'B' Conditions. These shall include the following elements:

- a) **Flight** – to conduct safe flight operations;
- b) **Design** – to determine the areas where flight testing has to be undertaken and provide information on the appropriate conditions and limitations and also to control the aircraft build standard or modification state. The conditions shall include specification of any additional maintenance of the aircraft arising from development or modification;
- c) **Airworthiness and Inspection** – to ensure compliance with the requisite build standard or modification state (embracing manufacture, inspection and installation) and adequate maintenance of the aircraft whilst operating under 'B' Conditions;
- d) **Quality Management** – an independent quality system that will by means of auditing ensure that the Organisation (embracing Flight, Design, Airworthiness/ Inspection) operates in accordance with established procedures and remains in compliance with this Chapter.

The relative strengths of these four elements may vary according to the nature of the work undertaken. (See Appendices to this Chapter). The Applicant may form an association with other approved Organisations to meet the requirements of the approval.

3.4.2 Essential Procedures

Procedures must be documented and agreed with the CAA to address the following:

- a) **Airworthiness.** The holder of an approval granted under this Chapter shall not allow an aircraft to fly unless he is satisfied that the aircraft is in every way fit for flight;
- b) **Conduct of Flights.** Flights shall only be undertaken in accordance with the Air Navigation Order supplemented by such procedures as the approval holder considers necessary and which are accepted by the CAA. Applicants shall ensure that aerodromes used for flying under 'B' conditions are suitable for the testing proposed.
- c) **Safety Provisions for Test Flying.** For all test flying under 'B' Conditions, the approval holder must consider the need for special equipment for the purposes of the safety of the trials, e.g. harnesses, parachute stowages, emergency exits, anti-spin parachutes, instrumentation and the means for disconnecting automatic devices;
- d) **Certificate of Clearance.** An aircraft shall not fly on any test flight unless an appropriate Certificate of Clearance is completed by the approval holder.

3.4.3 Optional Procedures

Where it is intended that the activities, in this paragraph, are to be undertaken the Exposition must contain procedures to address them.

Air Displays

F1 or F3 Approval – Before an aircraft may participate in an air display in accordance with Schedule 3 of the Air Navigation Order, the approval holder shall ensure that the aircraft build standard, operating limitations and display profile have been agreed to by the CAA.

F4 Approval – Display flying is not permitted under an F4 approval.

3.4.4 Foreign Registered Aircraft

Arrangements for flight testing by a Chapter A8-9 approval holder, of aircraft registered in a country other than the UK shall be agreed in writing with the Authority of the country of registry. The aircraft is to be maintained, operated and (if necessary) modified in a manner acceptable to the Authority of the country of registry as well as being conducted in accordance with the Organisation's Exposition.

3.5 Nomination of Persons for Acceptance by the CAA

Except where otherwise stated for each person nominated under this paragraph, a Form AD458 shall be submitted to the CAA.

For the head of the flight test function and all flight test aircrew, the following additional particulars are required:

- a) Licences held;
- b) Particulars of flight training;
- c) Aircraft types on which in current flying practice (Reference JAR-FCL 1.245 (JAR-FCL 1 Subpart F) and JAR-FCL 2.245 (JAR-FCL 2 Subpart F));
- d) Total hours on each type;
- e) Test flying qualifications and experience.

3.5.1 **F1 or F3 Approval**

The Applicant for approval shall nominate for acceptance by the CAA:

- a) The individual accountable for ensuring compliance with the requirements of this Chapter whose function will include co-ordination between all Organisations involved;
- b) Signatories to certificates and schedules required by this Chapter.

3.5.2 **F4 Approval**

The applicant for approval shall be satisfied that the following persons hold the appropriate licenses or approvals and are otherwise suitably qualified.

- a) The individual accountable for ensuring compliance with the requirements of this Chapter whose function will include co-ordination between all organisations involved.
- b) Signatories to certificates and schedules required by this Chapter.

Where the applicant is in doubt as to the suitability of a person a Form AD458 shall be submitted to the CAA.

3.6 **Flight Crew**

The number and qualifications (including licences where applicable) of the minimum flight crew shall be subject to agreement between the Organisation and the CAA for each type or category of aircraft (as appropriate) concerned.

NOTE: This arrangement will not prejudice the minimum flight crew finally specified in the Flight Manual.

3.7 **Certificate of Clearance**

3.7.1 **F1 or F3 Approval** (see Chapter A8-9 Appendix 1 or 2 as applicable)

- a) All flights under 'B' Conditions shall be covered by a Certificate of Clearance, the form of which shall be agreed to by the CAA. There shall be procedures in place to ensure that the Certificate of Clearance is amended, or replaced by a new certificate, whenever a change is made to the aircraft design standard or to any document or action referenced by the Certificate of Clearance.
- b) Before flight of an aircraft under 'B' Conditions, the Certificate of Clearance shall be signed by approved persons from each of the following functions, as defined in paragraph 3.4.1:
 - i) Design;
 - ii) Airworthiness and Inspection (as applicable for build standard and maintenance);
 - iii) Flight (aircraft commander) and test pilot, if appropriate;
 - iv) Quality Management. Where the organisation responsible for the control and management of the 'B' Conditions project has employed another suitably approved organisation to carry out one or more of the elements required, then the signatory to the Certificates of Clearance shall sign under the approval of their own organisation and state the applicable approval reference. It is expected that at least the signatory for the Quality Management and Design elements will be under the approval authority of the applicant.

- c) The persons signing the Certificate of Clearance shall ensure that the information provided is adequate to enable the crew to carry out the proposed flights. Before the crew undertakes the flight, they shall be satisfied with the adequacy of the information provided, and the aircraft commander shall sign the Certificate of Clearance.

3.7.2 **F4 Approval** (See Chapter A8–9, Appendix 3)

- a) All flights under 'B' Conditions shall be covered by a Certificate of Clearance as defined in Appendix 3 of this Chapter.
- b) Prior to the completion of a Certificate of Clearance the applicant shall have supplied to the CAA for review any data, reports, or other substantiation of airworthiness that the CAA may require, together with a flight test schedule.
- c) The Certificate of Clearance shall:
 - i) be signed by an approved person from the appropriate design function to certify the design standard and the flight test schedule for flight, or
 - ii) reference a document signifying CAA acceptance of the design standard and the flight test schedule for flight.
- d) The Certificate of Clearance shall be signed by a person acceptable to the CAA to certify that all necessary actions embracing maintenance, installation and inspection have been completed prior to flight and that the aircraft is in conformance with the defined design standard. (See Appendix 3 sub-paragraph 3.1.2 c)).
- e) The Certificate of Clearance shall be signed by a person acceptable to the CAA performing the quality management function to certify that all relevant procedures have been carried out satisfactorily, prior to flight.
- f) The pilot in command of the aircraft for the particular flight, and the test pilot if appropriate shall sign the Certificate of Clearance, prior to flight, to certify that he has received and understood all of the information necessary to conduct the flight to the specified schedule.

3.8 **Flight Data Recording**

- 3.8.1 Each aircraft to be flown under 'B' Conditions shall be fitted with data and/or voice recording equipment as specified in the Air Navigation Order Schedule 4 as appropriate for the description of the aircraft. Flight testing for the issue of a Certificate of Airworthiness for series production aircraft does not require fitment of flight data recorder or voice recorder equipment.
- 3.8.2 Reserved.
- 3.8.3 The equipment, when required by the Air Navigation Order Schedule 4, shall be operational throughout each flight conducted under 'B' Conditions. The data and/or voice recording systems may be unserviceable for any positioning flights associated with flights under 'B' Conditions.
- 3.8.4 In respect of each aircraft flown under 'B' Conditions and which is required to carry recording equipment, a specimen of acceptable records obtained from the equipment specified in the foregoing paragraphs 3.8.1 to 3.8.3 (inclusive) shall be preserved together with a means of identifying the flight to which the record relates. An F4 approval holder need only provide a specimen of the records obtained if there is any evidence that the conduct of the flight test was not satisfactory.
- 3.8.5 The records required by paragraph 3.8.4 above shall not be destroyed without written authorisation from the CAA.

3.9 Aircraft Markings

3.9.1 Aircraft not registered in the United Kingdom nor under the law of any country referred to in Article 3 of the Air Navigation Order, shall be marked so as to comply with the following paragraphs 3.9.2 and 3.9.3.

3.9.2 The aircraft shall be marked with the letter G followed by a numeral which shall be allocated by the CAA ('B' Conditions Number) and further followed by any other numeral allocated by the approved Organisation. The three marks shall be separated by hyphens such that the combined marks are not those displayed currently by any other aircraft. The marks shall conform to the principles of the Air Navigation Order as to registration marks of aircraft in respect of position, size, width, spacing and colour.

NOTE: These markings are only permissible within UK airspace. Where 'B' Conditions controls are agreed by the CAA for use outside UK airspace, the aircraft must be registered and display the appropriate registration marks.

3.9.3 The holder of the Approval granted under this Chapter shall maintain a register of the markings, which shall cross refer to the corresponding aircraft serial number allocated by the Manufacturer.

3.10 Maintenance of Aircraft

Any aircraft flying under 'B' Conditions shall continue to be maintained in accordance with the maintenance schedule or programme approved for the said aircraft. Any aircraft flying under 'B' Conditions for which there is no approved maintenance schedule or programme shall be maintained in an airworthy condition in accordance with a programme of maintenance prepared in accordance with appropriate procedures of the 'B' Conditions approval holder. These procedures should include provisions for any additional maintenance, which may arise from development or modifications to the aircraft while operating under 'B' Conditions.

4 Requirements for Maintaining Approval

4.1 The Organisation shall be maintained at the standard necessary to undertake the work for which it is approved and the CAA shall, at all reasonable times, have access to the Organisation for the purpose of assessing the standard in use.

4.2 Any changes to the information provided to the CAA for the grant of the approval shall first be notified to the CAA in writing. Such changes require CAA approval.

4.3 Where an Exposition is required, this and any associated Supplements shall be maintained up to date. All amendments must be approved by the CAA.

4.4 Changes of the persons nominated in accordance with paragraph 3.5 of this Chapter shall be notified to the CAA in writing for acceptance.

4.5 At all reasonable times, the CAA shall have access to all data, reports, and records relating directly or indirectly to the flight testing or airworthiness of an aircraft, engine, or any part thereof. The CAA shall also have the right to witness tests or inspections in any way associated with establishing the airworthiness or fitness for flight of an aircraft, engine, propeller, or any part thereof.

4.6 The CAA may revoke, suspend, or vary the Schedule of Approval if the conditions required for approval are not maintained or if the Organisation cannot continue to demonstrate compliance.

4.7 Any 'reportable occurrence', meaning an incident or accident subject to the provisions of Article 117 of the Air Navigation Order, shall be reported to the CAA in accordance with the information and guidance provided in CAP 382 'The Mandatory Occurrence Reporting Scheme'.

Appendix 1 to A8-9

Approval of Organisations for Flight under 'B' Conditions Group F1

This Appendix contains information for guidance in complying with the requirements of Chapter A8–9 applicable to an F1 approval.

1 Reserved

2 Management

The following information is required to be included in the Organisation Exposition:

- a) Name and address of company;
- b) A company Organisation chart showing the lines of responsibility to the Chief Executive of:
 - i) the chief test pilot and/or the head of the flight test function (see paragraph 3 below);
 - ii) the design function (see paragraph 4 below);
 - iii) the quality management function (see paragraph 5 below);
 - iv) the airworthiness and inspection, which includes the manufacturing, installation and maintenance functions (see paragraph 6 below).
- c) Procedures detailing how the flight test function will interface with the approved design and quality management functions, for the issue of a Certificate of Clearance, including the procedures for the generation and approval of flight test schedules;
- d) The nominated signatories for the Certificate of Clearance;
- e) A copy of a Certificate of Clearance;
- f) Procedures detailing the interface arrangements of any associated Organisations supporting the 'B' Conditions approval.

NOTE: The flight test schedule in c) above must specify the test points to be examined during a specific test flight.

3 The Flight Test Function

The following should be included in the Exposition:

- a) Particulars of facilities for the Flight Test function;
- b) An Organisation chart showing the lines of responsibility of the flight test personnel to the Head of the Flight Test function;
- c) The names of the Certificate of Clearance flight test signatories (see also paragraph 7 n) of this Appendix);
- d) The flight Test Operations Manual, detailing the procedures for the control of flight tests.

4 The Design Function

The following information relating to the design function should be included in the Exposition:

- a) Details of the design function supporting the 'B' Conditions approval;
- b) The names of the Certificate of Clearance design signatories (see also paragraph 7 k) of this Appendix);
- c) The procedures for the control of the modification standard, configurations and conditions to be flight tested.

5 The Quality Management Function

The following information relating to the quality management function should be included in the Exposition:

- a) Details of the quality management function supporting the 'B' Conditions approval.
- b) The names of the Certificate of Clearance design signatories (see also paragraph 7 k) of this Appendix).

6 The Airworthiness and Inspection Function

The following information relating to the airworthiness and inspection function, which includes manufacture, installation and maintenance, should be included in the Exposition:

- a) The names of the Certificate of Clearance Airworthiness and Inspection signatories (see also paragraph 7 l) and m) of this Appendix;
- b) The procedures for the control of the build standard of the aircraft;
- c) The procedure for notifying the pilot of any changes embodied on the aircraft;
- d) The arrangements for maintaining the aircraft (see Chapter A8-9, sub-paragraph 3.10).

7 Certificate of Clearance

The form of the Certificate of Clearance, to be agreed with the CAA, should normally contain at least the following information:

- a) Organisation name and approval number;
- b) Certificate number;
- c) The date of issue;
- d) Type, serial number and registration of the aircraft;
- e) A reference to documents defining the design standard of the aircraft;
- f) A reference to the approved flight test schedule(s);
- g) The maximum weight and centre-of-gravity limits;
- h) All pertinent operating limitations;
- i) The minimum crew;

- j) Any other restrictions considered necessary;
- k) A statement that the design standard and conditions stated on the certificate are adequate to conduct the necessary flight tests;
- l) A statement that the build standard of the aircraft conforms to the design standard and that the aircraft is fit for flight;
- m) A statement of compliance with maintenance requirements specified by the manufacturer and if appropriate, as modified by the design function in relation to the work being undertaken, including hours available to the next maintenance check;
- n) A statement that the flight crew (and ground observers) understand and accept the test plan and limitations for the flight and that a pre-flight briefing has been carried out;
- o) A statement by the quality management function that all relevant procedures have been carried out satisfactorily.

8 Functional Flight Tests

An aircraft conforming to a build standard, including all modifications, which has previously been approved by the CAA will normally require no further action on behalf of the Applicant. However, the instructions for actions to be completed prior to release to service for the aircraft, or for embodiment of an approved modification may require a functional flight test to be undertaken. If the flight test involves a functionality test only, then it can be carried out under 'A' Conditions and does not require any 'B' Conditions approval. Test flying of an aircraft of a build standard, including all modifications, not previously approved by the CAA will normally be undertaken using a 'B' Conditions approval.

9 Categories of Aircraft

As indicated in Chapter A8–9 paragraph 1.5, setting out the requirements for grant of approval may restrict the Organisation to a limited scope or category of aircraft. An Organisation may be approved for more than one category. The following categorisation will be used in the Schedule of Approval in relation to the categories of aircraft:

Category 1; Aeroplanes greater than 5,700 kg.

Category 2; Aeroplanes up to and including 5,700 kg.

Category 3; Rotorcraft greater than 5,700 kg.

Category 4; Rotorcraft, excluding Light Gyroplanes, up to and including 5,700 kg.

Category 5; Very Light Aeroplanes up to 750 kg.

Category 6; Microlight Aeroplanes and Small Light Aeroplanes up to 450 kg.

Category 7; Sailplanes and Powered Sailplanes.

Category 8; Gas Airships.

Category 9; Manned Free Balloons and Hot Air Airships.

Category 10; Light Gyroplanes.

NOTE: These are broad categories which may cover a wide variety of types of aircraft. Further restrictions may be imposed within these categories.

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Appendix 2 to A8-9

Organisations - Approval for Flight under 'B' Conditions Group F3

This Appendix contains information for guidance in complying with the requirements of Chapter A8–9 applicable to an F3 approval.

1 **Application for Group F3 Approval** (see Chapter A8–9, paragraphs 1.2 c), 3.2, 3.5 and 4.2)

The F3 Approval is one of specified duration and specified scope. It is recognised that some Organisations will have the need to apply for additional approval(s) within the F3 group either after termination of the task against which the original approval was granted, or concurrently with the original task. It is not the intention of the requirements of Chapter A8–9 in this case to place undue burden upon Organisations in the subsequent application process.

- a) When making the initial application for the grant of a group F3, or in the event of making a new application following a revocation or suspension of a previous F3 Approval, the Organisation must satisfy all relevant parts of Chapter A8–9 including the provision of an appropriate Exposition (or supplement to an existing Exposition where an approval in another group is held).
- b) Where an Organisation wishes to make a subsequent application for the grant of a group F3 Approval and has previously held an F3 Approval which has expired having reached its specified duration, or holds a current F1 or F3 approval with a different scope specification, then the CAA may agree that a full Exposition, satisfying all relevant parts of Chapter A8–9, is not necessary and it will be sufficient for that Organisation to include with the application a supplement to the original Exposition submitted and approved in connection with the original application.
- c) The Exposition supplement, identified in sub-paragraph 1 b) of this Appendix, need only identify the items, required by Chapter A8–9, which have changed from that identified in the original document and should contain a statement that all other items in the original document remain unchanged. The basic procedures, which control the flight test activity, would not be expected to change. Examples of the items that may change are the modification reference, flight test schedule, aircraft registration and serial number, flight test crew, manufacture, installation or maintenance organisations etc.
- d) Where an application is made for the grant of an additional group F3 Approval, as defined in sub-paragraph 1 b) of this Appendix, then the CAA process required to investigate the application will normally consider only the changes and will be kept to a minimum. In the event that no changes have occurred, or where the changes are simple, an expeditious process resulting in the granting of the F3 Approval can be anticipated.
- e) Notwithstanding any other statement contained within this Appendix, where an Organisation has, or has applied for, the grant of more than one F3 Approval, the CAA may wish to reassess the standards in use from time to time .

- f) In connection with an application made for the grant of an additional group F3 Approval, as defined in sub-paragraphs 1 b) and 1 d) of this Appendix, any charges due will be commensurate with the CAA work involved and may be less than that required for an initial application. In certain circumstances, particularly where no changes have occurred, it may be possible to include the charges for the additional F3 Approval within the overall charges for an associated modification.

2 Management

The following information is required to be included in the Organisation Exposition:

- a) Name and address of company;
- b) A company Organisation chart showing the lines of responsibility to the Chief Executive of:-
 - i) the Chief Test Pilot and/or the head of the flight test function (see paragraph 3 below);
 - ii) the design function (see paragraph 4 below);
 - iii) the quality management function (see paragraph 5 below);
 - iv) the airworthiness and inspection function which includes the manufacturing, installation and maintenance functions (see paragraph 6 below).
- c) Procedures detailing how the flight test function will interface with the approved design and quality management functions, for the issue of a Certificate of Clearance, including the procedures for the generation and approval of flight test schedules;
- d) The nominated signatories for the Certificate of Clearance;
- e) A copy of a Certificate of Clearance;
- f) Procedures detailing the interface arrangements of any associated Organisations supporting the 'B' Conditions approval.

NOTE: The flight test schedule in c) above must specify the test points to be examined during a specific test flight.

3 The Flight Test Function (see Chapter A8–9, sub-paragraphs 3.4.1 a) and 3.4.2)

The following should be included in the Exposition or Exposition Supplement as appropriate:

- a) Particulars of facilities for the Flight Test function;
- b) An Organisation chart showing the lines of responsibility of the flight test personnel to the Head of the Flight Test function;
- c) The names of the Certificate of Clearance flight test signatories (see also paragraph 7 k) of this Appendix).
- d) The flight Test Operations Manual, detailing the procedures for the control of flight tests, must be referred to in the Exposition.

4 The Design Function

The following information relating to the design function should be included in the Exposition or Exposition Supplement as appropriate:

- a) Details of the design function supporting the 'B' Conditions approval;
- b) The names of the Certificate of Clearance design signatories (see also sub-paragraph 7 k) of this Appendix;
- c) The procedures for the control of the modification standard, configurations and conditions to be flight tested.

5 The Quality Management Function

The following information relating to the quality management function should be included in the Exposition:

- a) Details of the quality management function supporting the 'B' Conditions approval;
- b) The names of the Certificate of Clearance design signatories (see also sub-paragraph 7 o) of this Appendix).

6 The Airworthiness and Inspection Function

The following information relating to the airworthiness and inspection function, which includes manufacture, installation and maintenance, should be included in the Exposition:

- a) The names of the Certificate of Clearance Airworthiness and Inspection signatories (see also sub-paragraphs 7 i) and 7 m) of this Appendix);
- b) The procedures for the control of the build standard of the aircraft;
- c) The procedure for notifying the pilot of any changes embodied on the aircraft;
- d) The arrangements for maintaining the aircraft.

7 Certificate of Clearance

The form of the Certificate of Clearance to be agreed with the CAA should normally contain at least the following information:

- a) Organisation name and approval number;
- b) Certificate number;
- c) The date of issue;
- d) Type, serial number and registration of the aircraft;
- e) A reference to documents defining the design standard of the aircraft;
- f) A reference to the approved flight test schedule(s);
- g) The maximum weight and centre-of-gravity limits;
- h) All pertinent operating limitations;
- i) The minimum crew;
- j) Any other restrictions considered necessary;

- k) A statement that the design standard and conditions stated on the certificate are adequate to conduct the necessary flight tests;
- l) A statement that the build standard of the aircraft conforms to the design standard and that the aircraft is fit for flight;
- m) A statement of compliance with maintenance requirements specified by the manufacturer and if appropriate, as modified by the design function in relation to the work being undertaken, including hours available to the next maintenance check;
- n) A statement that the flight crew (and ground observers) understand and accept the test plan and limitations for the flight and that a pre-flight briefing has been carried out;
- o) A statement by the quality management function that all relevant procedures have been carried out satisfactorily.

8 Functional Flight Tests

An aircraft conforming to a build standard, including all modifications, which has previously been approved by the CAA will normally require no further action on behalf of the Applicant. However, the instructions for actions to be completed prior to release to service for the aircraft, or for embodiment of an approved modification may require a functional flight test to be undertaken. If the flight test involves a functionality test only, then it can be carried out under 'A' Conditions and does not require any 'B' Conditions approval. Test flying of an aircraft of a build standard, including all modifications, not previously approved by the CAA will normally be undertaken using a 'B' Conditions approval.

9 Categories of Aircraft

As indicated in Chapter A8–9 paragraph 3, setting out the Requirements for grant of approval may restrict the Organisation to a limited scope or category of aircraft. An Organisation may be approved for more than one category. The following categorisation will be used in the Schedule of Approval in relation to the categories of aircraft:

Category 1; Aeroplanes greater than 5,700 kg.

Category 2; Aeroplanes up to and including 5,700 kg.

Category 3; Rotorcraft greater than 5,700 kg.

Category 4; Rotorcraft, excluding Light Gyroplanes, up to and including 5,700 kg.

Category 5; Very Light Aeroplanes up to 750 kg.

Category 6; Microlight Aeroplanes and Small Light Aeroplanes up to 450 kg.

Category 7; Sailplanes and Powered Sailplanes.

Category 8; Gas Airships.

Category 9; Manned Free Balloons and Hot Air Airships.

Category 10; Light Gyroplanes.

NOTE: These are broad categories which may cover a wide variety of types of aircraft. Further restrictions may be imposed within these categories.

Appendix 3 to A8-9

Approval of Organisations for Flight under 'B' Conditions Group F4

This Appendix contains information for guidance in complying with the requirements of Chapter A8–9 for Group F4.

1 Application for Group F4 Approval

The F4 approval is one of specified duration and specified scope. Due to the strictly limited nature of this approval, credit will not normally be given in respect of any subsequent application for any approval under Chapter A8–9.

2 Reserved.

3 Information Required for BCAR A8-9 F4 Approval Application

The information listed in this section must be provided to support an application for F4 approval.

3.1 Compliance and Control Statement (Form AD F400)

The information itemised in this paragraph 3.1 should be provided in a single document in the order listed. (Form AD F400 may be obtained from the Civil Aviation Authority, Applications and Approvals Department, Aviation House, Gatwick Airport South, West Sussex RH6 0YR.)

3.1.1 General

- a) Applicant (Name, Address, Contact No, E-mail etc);
- b) Justification for the application for approval (the need for the proposed flying activity, identification of modification etc.);
- c) Substantiation that there are no significant flight safety implications associated with the proposed activity;
- d) Aircraft to be tested (Aircraft Type, Serial Number, and registration;
- e) Intended start and end dates for the flight trials.

3.1.2 Personnel

- a) Name of the person who will be accountable and has corporate authority for ensuring compliance with the terms of the F4 approval and the safe conduct of the flight trials. This person will confirm that all relevant CAA requirements are complied with by signing the declaration at Section 8 of the Form AD F400;
- b) Name(s) of the flight crew. Note that the carriage of passengers is not permitted.
- c) Name of the person who will certify that the aircraft is fit for the intended flight. (This person may be a licensed aircraft maintenance engineer, a person approved by an Approved Organisation or a person nominated under paragraph 3.5.2 and accepted by the CAA as a signatory under this Chapter A8–9);
- d) Name of any other signatories of certificates and/or schedules;

- e) Name of the person responsible for the Quality Management ensuring that all procedures have been carried out satisfactorily.

3.1.3 **Facilities**

- a) Maintenance facilities;
- b) Facilities for the planning of flights, and pre and post flight briefings;
- c) Administration facilities suitable for the production and storage of documents associated with 'B' Conditions activities. This should include release documentation for manufactured parts.

3.1.4 **Design Clearance**

- a) Definition of aircraft standard, as defined by Type Certificate Data Sheet or other documents, plus all subsequent modifications;
- b) Design approval of the aircraft prior to flight:
 - i) Reference to the documents and/or drawings defining the modification or operation to be evaluated during the flight trials;
 - ii) Where applicable, the identity of any associated Organisation that holds an appropriate design approval granted by the CAA together with their statements of compliance against the applicable airworthiness standards;
 - iii) Where applicable, reference to the Airworthiness Approval Note or other documented CAA acceptance of the suitability of the design for the proposed flight trials.
- c) A statement of any aircraft limitations to be complied with during the flight trials, in addition to those contained in any Flight Manual or existing permit to fly.

3.1.5 **Aircraft Maintenance**

Identification of the aircraft maintenance schedule in use, (e.g. LAMS), including any special procedures or inspections to be applied to the modification being evaluated.

3.1.6 **Parts Manufacture**

Identification of the origin of parts comprising any modifications not yet approved (e.g. EASA Form One(s) for parts comprising the modification to be assessed during the trials).

3.1.7 **Quality Management**

The person responsible for quality management, identified on Form AD F400 must ensure that all of the required documentation is in place and completed correctly prior to signing Form AD F401.

3.2 **Flight Test Schedule**

A flight test schedule for the trials shall be provided for approval by the CAA. The flight test schedule must specify the test objectives and, for each test point, the test conditions and manoeuvres to be flown and the measurements and observations that will be required.

3.3 **Certificate of Clearance (Form AD F401)**

A Certificate of Clearance must be completed prior to each flight. (Form AD F401 may be obtained from the Civil Aviation Authority, Applications and Approvals Department, Aviation House, Gatwick Airport South, West Sussex RH6 0YR.)

4 Significant Flight Safety Implications

Significant flight safety implications exist:

- a) with modifications for which it may reasonably be expected that there will be an effect on aircraft handling, stability or a reduction in climb performance. Applicants must provide a written justification that there will be no significant flight safety implications for the intended flight tests. Some modifications that affect performance, such as those for banner towing, do not present significant flight safety risk and so test flights to quantify the performance change may be conducted under an F4 approval
- b) when a modification could be expected to affect flight control systems such as primary flying control, FADEC, autopilot etc.
- c) for EGPWS, GPWS or TCAS modifications for which no previous STC approval has been granted or no previous CAA approval of the modification has been given on another aircraft type and where unusual manoeuvres must be flown to obtain approval of a modification.

5 Functional Flight Tests

A modification which has previously been approved by the CAA will normally require no further action on behalf of the Applicant. However, the modification may, in its instructions, require a functional flight test to be undertaken prior to formal acceptance of the modification. If the flight test involves a functionality check only, then it can be carried out under 'A' Conditions and does not require any 'B' Conditions approval. Test flying of modifications not previously approved by the CAA, will normally be undertaken using a B Conditions approval.

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Chapter A8-10 Approval of Welders

1 Introduction

This Chapter is applicable to persons who weld metallic parts which are essential to the airworthiness of an aircraft where the making of a sound joint by oxy-acetylene or arc-fusion welding techniques depends largely on the competency of the Operator. Welders will be approved in accordance with the requirements of this Chapter and its Supplement.

NOTE: For the purposes of this Chapter A8–10, the term arc-fusion welding includes:

- a) Manual metal-arc (MMA) welding,
- b) Metal inert gas (MIG) welding, and
- c) Tungsten inert gas (TIG) welding.

2 Grant of Approval

The procedures for the issue and control of welding approval are dependent upon the circumstances of employment of the welder. For welders not employed by a CAA approved Organisation the provisions of paragraph 2.1 c) shall apply. Where a welder is in the employ of an Organisation approved by the CAA (BCAR Sub-Section A8) the CAA will not undertake direct approval of the welder. The Organisation is required to establish its own effective system for their control. The system shall, as a minimum, include records of all sample tests (and results) and a ready means of establishing the current qualification status of all welders employed. All records shall be available to the CAA upon request, including details relating to welders who have since left the employ of the Organisation. No essential records, e.g. Approval Cards and Test Reports shall be destroyed without the permission of the CAA. A description of the control system shall be included in the Company Exposition required by the relevant BCAR Chapter and CAA approval of the system will be indicated by inclusion of the control of welders in the Schedule of Approval.

2.1 The procedures for obtaining welder's approval are as follows:

- a) Where the welder is employed by a CAA approved Organisation, that Organisation shall make arrangements for the welder to prepare and weld an appropriate test sample(s). The Organisation shall submit the test sample(s) to a CAA approved Test House for examination together with full particulars of the welder concerned, materials used, details of any post-welding treatment (e.g. heat treatment for stress relief), and identification marks on the test sample(s). Upon receipt of an Approved Test Certificate from the test house, indicating successful test results for the sample(s), the Organisation may grant approval to the welder. Only then may the welder be employed on work of significance to airworthiness.
- b) In the event of a welder leaving the employ of an Organisation approved by the CAA, the welder may request the CAA to grant a Welder's Approval Certificate for the welding approvals held while in the employ of that Organisation. It should be noted that grant of such an approval, is conditional upon the availability of evidence of prior qualification status, the CAA can not accept responsibility for a previous employer's failure or inability to provide the evidence.
- c) Welders not employed by a CAA approved Organisation shall, under the supervision of a responsible person acceptable to the CAA (see Notes 1 and 2),

prepare and weld appropriate test sample(s) in accordance with these requirements and also complete CAA Form AD 408. The test sample(s) shall be submitted to a CAA approved Test House for examination together with full particulars of the welder concerned, materials used, details of any post-welding treatment (e.g. heat treatment for stress relief) and identification marks on the test sample(s). Upon receiving from the Test House an Approved Test Certificate indicating successful test results on the sample(s) the welder shall forward the original copy of the Approved Test Certificate and the completed CAA Form AD 408 to the CAA. Grant of approval will be notified by issue of a CAA Welder's Approval Certificate and Check Test Record Card to the welder. Both documents must be maintained in a legible condition by the welder and produced or surrendered to the CAA upon request. Test House charges and any other costs associated with the process of meeting these requirements are the responsibility of the welder.

- NOTES:**
- (1) An approved welder is not permitted to certify welded parts unless separately qualified as a person competent to issue a Certificate of Release to Service, e.g. holder of an appropriate Maintenance Engineer's Licence or equivalent approval.
 - (2) A responsible person in the context of paragraph 2.1c) is either:
 - (a) a person who holds an Aircraft Maintenance Engineer's Licence with a Type Rating;
 - or
 - (b) a person who is currently authorised as a Signatory within a CAA Approved Organisation. (The consent of the Approved Organisation responsible for granting such authorisation should be obtained by the Signatory before agreeing to supervise the preparation of weld test sample.);
 - or
 - (c) such other person specifically authorised in writing by the CAA.
 - (3) Welders' Approval Certificates issued prior to the May 1988 Revision of Chapter A8-10 may make reference to Sketches 3 and/or 4. All such references shall be interpreted as being equivalent to Figure 3 of the Supplement to this issue of Chapter A8-10.
 - (4) Paragraphs 2.1 a) and 2.1 c) refer to identification marks on test samples. These shall be made permanent i.e. stamp, vibro-etch, or indelible marking medium and they shall identify the welder and material specification. When preparing and welding the sample, care should be taken not to obliterate any markings thereon.

3 Maintenance of Approval

- 3.1 The validity of a welder's approval may be maintained by the procedures detailed in paragraphs 3.1.1 or 3.1.2 as appropriate. Should approval be sought in a different combination (see Supplement) than that shown on the Welder's Approval Certificate or documents, the procedure for the grant of approval as prescribed in paragraph 2.1 must be followed.
- 3.1.1 Where the welder is employed by an Organisation approved by the CAA, the approved Organisation shall arrange for periodic check examinations of the welder's

competency. At each periodic check examination an appropriate standard test sample (see Supplement) or such other test samples to be decided by the approved Organisation shall be completed by the welder using techniques and materials detailed in the Supplement, or by using techniques and material used in standard work practices appropriate to the maintenance of approval. For welders holding approval for more than one configuration (i.e. sheet to sheet, sheet to tube or tube to tube) it will normally only be necessary to provide a single test sample provided that the CAA is satisfied it is representative of the welder's main day-to-day work. However, a separate initial test sample will be required for each technique and material group specified in the welder's approval. Test samples shall be sent to a CAA approved Test House under arrangements made by the approved Organisation. If the test results of this examination are satisfactory the Welder's Approval document shall be endorsed by the approved Organisation. Complete records of the periodical check examinations shall be kept at the Organisation. The check test records for each welder must indicate the date for the next check test in advance so that the test can be completed and the results known within the period of approval of the welder. All records shall be held available to the CAA.

- a) The maximum period between check examinations shall be 12 months. Organisations shall arrange for the relevant test within the period of validity of the previous test period to ensure continuity of approval.
- b) If the test results are unsatisfactory the approved Organisation shall arrange for the check examinations to be repeated immediately and the samples sent to an approved Test House for examination. During the period between any check test which proved unsatisfactory and the result of the next check test, the welder shall not weld parts which are essential to the airworthiness of an aircraft. If the test results are again unsatisfactory the welder's approval shall be suspended until further training and/or experience has been gained to the satisfaction of the approved Organisation, and a further test has been satisfactorily completed.

3.1.2 Welders who are not employed in accordance with the conditions of paragraph 3.1.1 shall arrange for a check examination to be carried out at periods not exceeding 12 months. The same procedure as for the issue of the Welder's Approval Certificate in paragraph 2.1 c) shall apply except that, for welders holding approval for more than one configuration (i.e. sheet to sheet, sheet to tube, tube to tube) it will normally only be necessary to provide a single test sample, provided that the CAA is satisfied it is representative of the welder's main day-to-day work. However, a separate initial test sample will be required for each technique and material group specified in the welder's approval.

- a) If the test results are unsatisfactory the Applicant shall prepare new test samples and arrange for the check examination to be repeated immediately at a CAA approved Test House. During the period between any check test which proves unsatisfactory and the result of the next check test, the welder shall not weld parts which are essential to the airworthiness of an aircraft. If the result of the re-test is again unsatisfactory, the welder shall notify the CAA. The approval will be suspended from the date of the first unsatisfactory examination and remain so until further training and/or experience has been gained and a further test has been satisfactorily completed.
- b) A check test record must be kept to indicate the date for the next check test in advance so that the test can be completed and the results known within the period of approval of the welder. All records shall be made available to the CAA.

3.2 The CAA may select samples of an approved welder's work at any time for additional check examination purposes.

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Supplement 1 to A8-10 Approval of Welders

1 Introduction

Welders shall be approved in accordance with the technical requirements of this Supplement to Chapter A8-10.

2 Material Groups

Approval may be granted in any of the following groups:

- Group 1 – Aluminium Alloys.
- Group 2 – Magnesium Alloys.
- Group 3 – Carbon Steels.
- Group 4 – Corrosion and Heat-Resisting Steels
- Group 5 – Nickel Alloys.
- Group 6 – Copper Base Alloys.
- Group 7 – Titanium Alloys.

2.1 For the purpose of this Supplement to Chapter A8-10 the following Definitions shall apply:

- Combination – Material group, configuration and technique.
- Configuration – A sample produced to Figures 1, 2 or 3.
- Technique – The welding method e.g. oxy-acetylene or arc-fusion.
- Test Sample (Standard) – As detailed in Figures 1, 2 and 3.
- Test Sample (Special) – As dictated by the nature of work being undertaken (e.g. repair or rebuild fan blades etc.).

2.2 Approval, when granted to the welder, shall be restricted to the combinations for which satisfactory examination reports from an approved Test House are available to the CAA or the Approved Organisation, in accordance with the procedure under which the welder is to be approved, BCAR Chapter A8-10 paragraph 2 refers.

Alternatively, special test samples, agreed by the CAA or the Approved Organisation, should be prepared if required for a specific application, and the approval, when granted, will be restricted accordingly.

3 Test Samples and Specimens

Standard test samples for oxy-acetylene and arc-fusion welding shall be prepared by the welder using the techniques and materials appropriate to the approval sought. The specifications of the material used for test samples must meet the requirements of the material groups defined in paragraph 2 and be representative of materials likely to be encountered by the welder in the course of his normal work. CAA approved certificates are not necessary and material of good commercial quality may be appropriate. However, if the material used is not to a British Standard or other generally recognised aerospace specification a typical aircraft application must be

quoted to the CAA approved Test House as part of the material specification. The CAA or the Approved Organisation may decide that special test samples are required appropriate to the work to be undertaken by the welder. The preparation of test samples shall be supervised as defined in Chapter A8–10 paragraph 3.1.

- 3.1 **Standard Test Samples.** The standard test samples for oxy-acetylene and arc-fusion welding shall be prepared to Figures 1, 2 and 3 as appropriate.
 - 3.1.1 The welds of test samples shall not be hammered or dressed unless specifically required.
 - 3.1.2 The test samples shall be submitted complete and suitably identified (see Chapter A8–10 paragraph 2.1 Note (4)) to a CAA approved Test House.
 - 3.1.3 Where appropriate, e.g. for light aircraft structural applications, tube wall thickness may be reduced. In certain cases, where the nature of a welder's activities regularly involve welding thin wall tube, the controlling Organisation or Authority may require test specimens to be prepared from material of reduced wall thickness.
- 3.2 **Cutting Test Specimens.** Test specimens shall be cut by the approved Test House.
 - 3.2.1 Test specimens from standard test samples shall be cut in accordance with the tensile, bend and micro specimens shown in Figures 1, 2 and 3.
 - 3.2.2 Test specimens in magnesium must be sawn from samples and filed to final shape to prevent the possibility of cracking.

4 Mechanical Testing

- 4.1 **Tensile Test Specimens.** Tensile test specimens shall be tested to destruction in direct tension. The minimum acceptable tensile strength of the weld test specimen shall be determined by reference to public-domain DEF STAN 00–932 or by reference to a CAA recognised Design Authority who can judge the acceptable levels of weld strength required for typical applications of the weld technique in question.
 - 4.1.1 **Sheet to Sheet Butt Weld (Figure 1).** If a tensile specimen prepared in accordance with Figure 1 should break through the weld, it is considered satisfactory only if the ultimate stress is found to be equal to, or greater than, the minimum value given in the appropriate specification.
 - 4.1.2 **Tube to Tube Weld.** Tensile specimens prepared in accordance with Figure 3 shall be broken in a tensile test machine fitted with suitable shackles and pins, the pins being passed through the top and bottom cross tubes of the specimen so that the end load may be applied without bending.
- 4.2 **Bend Test Specimens (Figure 1).** Bend specimens shall be tested in bending so that the weld lies along the centre line of the bend and the base of the weld 'V' is on the inner side of the specimen after bending. The specimen must bend without cracking, through 180° (unless otherwise stated) over the radius of bend appropriate to the test.
 - 4.2.1 To ensure close contact of the specimen to the bar about which it is bent, the side of the specimen remote from the weld face must be dressed by filing or grinding until the weld is level with the parent metal. It may also be necessary to dress the other face to facilitate bending. The edges of the specimen in the vicinity of the weld must be given reasonable radii.

- 4.2.2 Bend test specimens of austenitic steel must be given the 'weld decay' pickling test prescribed either in the relevant specification or in accordance with British Standard 5903, and must be bent through 90° over a radius equal to three times the nominal thickness of the parent metal.
- 4.2.3 Magnesium alloy specimens must be bent through 180° over a radius equal to ten times the nominal thickness of the parent metal.
- 4.2.4 Aluminium alloy specimens must be bent through 180° over a radius equal to five times the nominal thickness of the parent metal.
- 4.2.5 Boron-containing steels must be bent through 180° over a radius equal to three times the nominal thickness of the parent metal.
- 4.2.6 Titanium alloy specimens must be bent through 180° over a radius equal to five times the nominal thickness of the parent metal.
- 4.2.7 Specimens of all other materials must be bent through 180° over a radius equal to twice the nominal thickness of the parent metal.
- 4.2.8 The bend tests may be considered satisfactory if the test specimen withstands the bending without showing cracks which are apparent to normal vision.

NOTE: If interpretation of the bend test results is in doubt, comparison may be made with the bend test performance of a separate sample of the parent material from which the test specimens were fabricated.

5 Specimen Examination

- 5.1 Final assessment of the weld shall be based on consideration of the sample weld as a whole, including the results obtained by visual, microscopical, and where applicable, mechanical testing. If any doubt exists regarding the quality of the weld, or any defect revealed is thought to be of a local character, further sections may, if available, be examined and final assessment shall be based on all the specimens examined.
- 5.2 The micro specimen shall be examined at suitable magnifications in the unetched and the etched condition.
- 5.3 The presence of intergranular oxide films is considered to be detrimental to the weld due to their embrittling effect, but the extent of these films is very difficult to determine in etched specimens. If the area of inter-granular oxide is only very slight and satisfactory results are obtained by mechanical testing, further sections of the weld shall be examined before a decision is reached.
- 5.4 Where fillet welds are concerned, unless complete fusion is required by the drawing, a certain degree of lack of fusion is permissible at the roots:
- For fillet welds of 45° or more, the maximum lack of fusion which can normally be accepted is that revealed by a line of oxide extending from the root of the weld for a distance not greater than one-third of that between the root and the toes of the weld. Provided the amount of weld material used has been adequate, this method of assessment should ensure that the effective throat thickness of the weld is not less than the thickness of the sheets or tubes used for the specimens.
 - For fillet welds at acute angles, full root fusion in tubular sections can be difficult to achieve and there is a danger of collapse of the tube walls if excessive penetration is attempted. The presence of a fairly large cavity, or corresponding lack of fusion, is permissible at the root of such welds but there should be a bridge of weld metal of a reasonable throat depth, showing satisfactory fusion to the basic metal.

- 5.5 **Sheet to Sheet Butt Welds.** The section must be free from excess oxidation, burning, cracks, cavitation, porosity, scale and slag. The specimen must show adequate penetration and with specimens welded from one side only, there should be evidence of adequate penetration when the underside of the weld is examined. If excessive penetration has occurred along the majority of the weld the specimen must be rejected, but isolated excrescences on the underside are permissible, provided the weld itself is free from cavities, oxide films, and other defects.
- 5.6 **Tube to Sheet and Tube to Tube Welds.** The specimens must show adequate penetration and freedom from excess oxidation cracks, cavitation, porosity, scale and slag.
- 5.7 **Records.** The results of all examinations must be recorded.

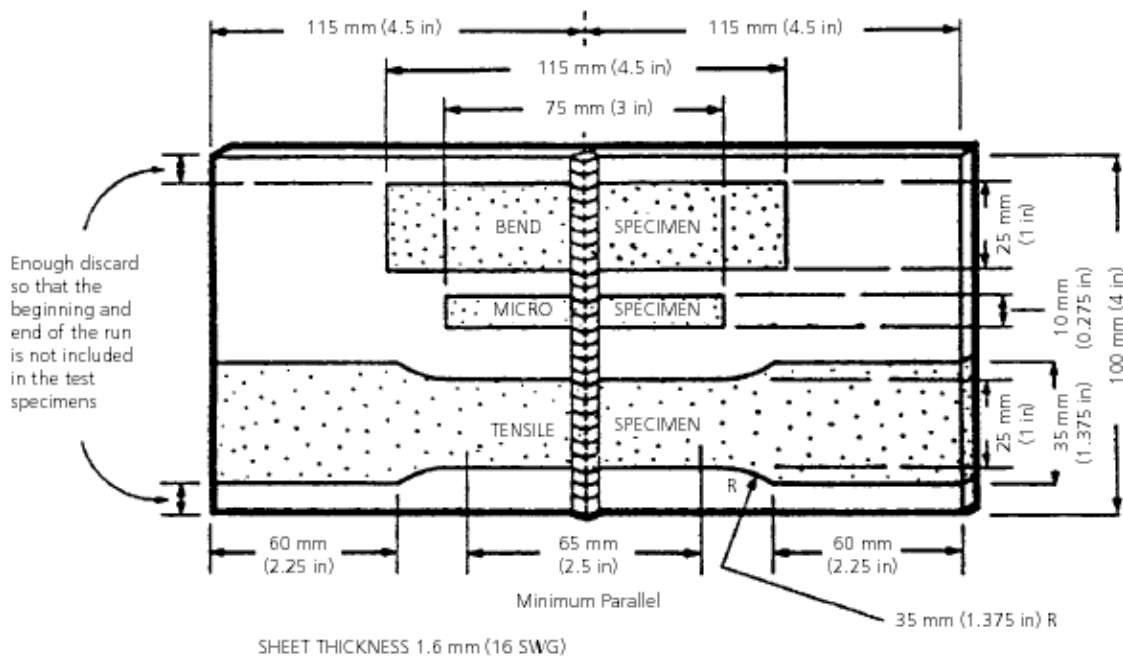
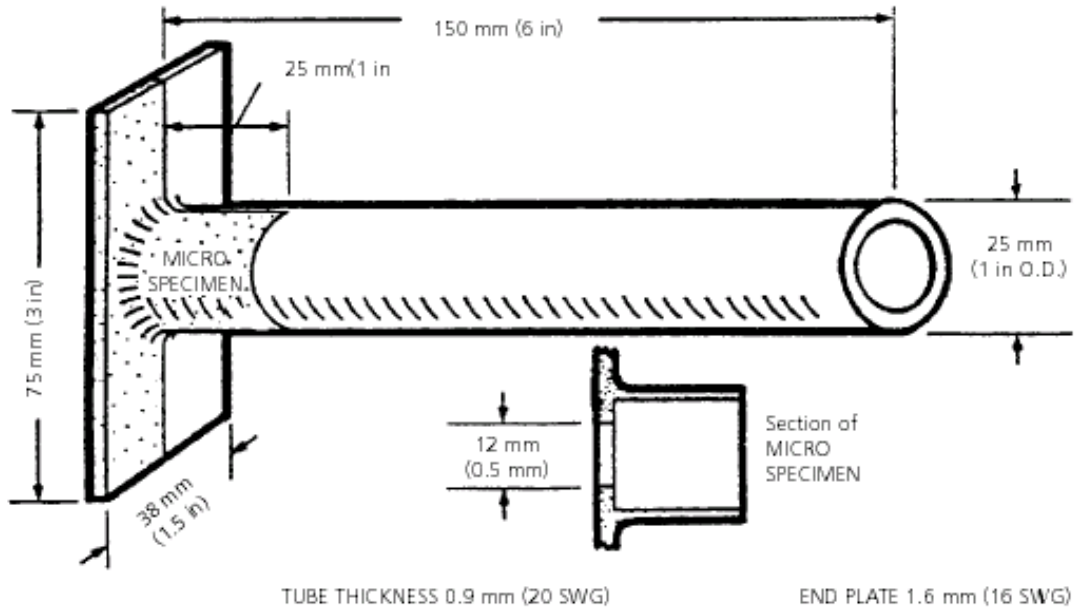


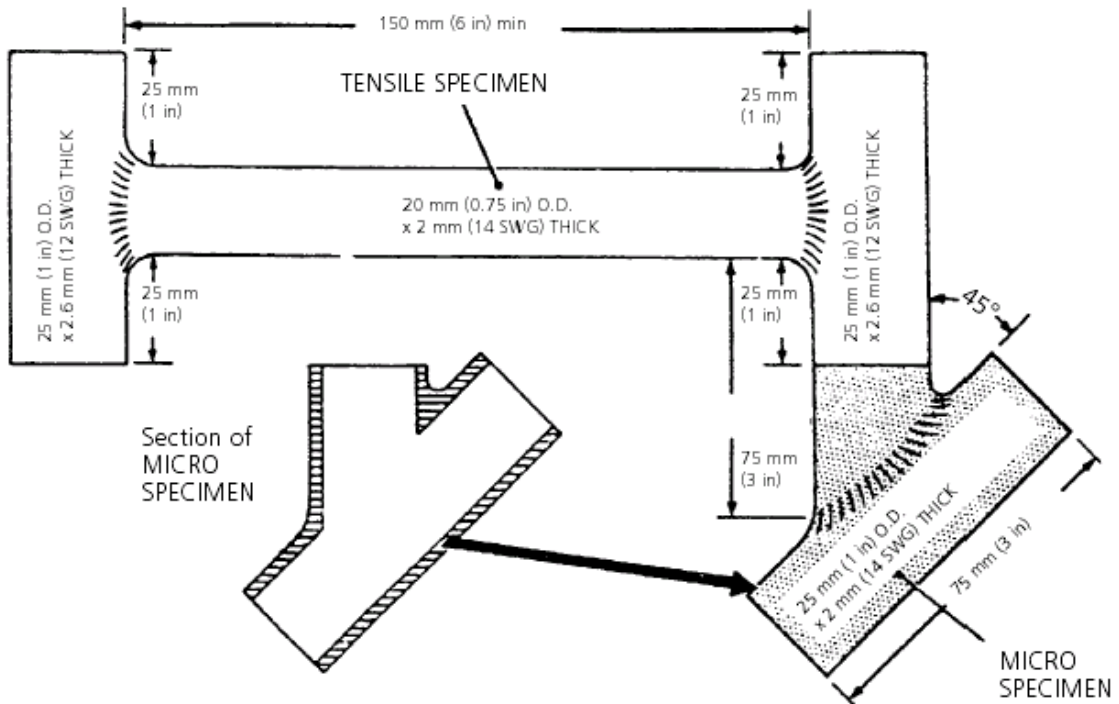
Figure 1 SHEET TO SHEET BUTT WELD

NOTE: Dimensions may be regarded as approximate.



NOTE: If desired, an end plate may be welded to each end of the test specimen to provide additional material for use in assessing borderline cases (see 5.1)

Figure 2 SHEET TO TUBE WELD



NOTE: If desired, small air vent holes may be drilled in the 2.6 mm (12 swg) tubes in the tensile specimen and the 2 mm (14 swg) tube in the micro specimen.

Figure 3 TUBE TO TUBE WELD

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Chapter A8-11 Procedures for Approval of Organisations Concerned with Radiographic Inspection of Aircraft during Maintenance and Overhaul

1 Introduction

Organisations engaged in radiographic inspection of aircraft during overhauls, repairs, replacements, modifications and inspections may be approved to provide reports and certify compliance in respect of this work on aircraft structures, structural components, and welded structural components, subject to compliance with the procedures set down in this Chapter A8-11 and the Supplement.

NOTE: Safety and protection procedures are not included in this Chapter and Supplement. It is incumbent on the Operator to comply with the Radioactive Substances Act and any other relevant Regulations.

2 Application

Organisations seeking approval, or the extension of an existing approval, for the radiographic work described in paragraph 1, shall make written application to the CAA Safety Regulation Group.

3 Requirements for Grant of Approval

- 3.1 The radiographic department shall be organised under the direction of a radiographer who has satisfied the appropriate requirements of the Supplement to this Chapter.
- 3.2 All radiographic inspections shall be directly supervised and the final certification made by a radiographer who has satisfied the appropriate requirements of the Supplement. Certification shall be in a form agreed by the CAA.
- 3.3 Radiographic inspections concerned with the inspections required in approved Manuals, approved Maintenance Schedules, the CAA Mandatory Aircraft Modifications and Inspections Summary and the Foreign Airworthiness Directives volumes, shall be made in accordance with techniques approved by the manufacturer, or an appropriately approved Organisation unless an alternative technique has been accepted by the CAA.

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Supplement 1 to A8-11 Procedures for Approval of Organisations Concerned with Radiographic Inspection of Aircraft during Maintenance and Overhaul

1 Requirements for the Radiographer

1.1 The following shall be satisfied by the person(s) required under paragraphs 3.1 and 3.2 of Chapter A8-11:

1.1.1 For aircraft structures and structural components (other than welds):

- a) be able to read, write and converse in the English language;
- b) have experience, acceptable to the CAA, of a minimum of one year dealing with practical inspection of aircraft structures, or alternative training or experience acceptable to the CAA;
- c) have satisfactorily completed a course of instruction in radiography acceptable to the CAA;
- d) produce evidence, satisfactory to the CAA, of at least six months' recent work in radiographic inspection of aircraft structures and structural components, including processing and interpretation of radiographs;
- e) have achieved a satisfactory standard, acceptable to the CAA, in the appropriate parts of the examination in accordance with paragraph 2 of this Supplement.

1.1.2 For light alloy and dense metal welded structural components:

- a) be able to read, write and converse in the English language;
- b) have satisfactorily completed a course of instruction in radiography acceptable to the CAA;
- c) produce evidence, satisfactory to the CAA, of at least three months' recent work in the radiographic inspection of both (or either if required separately) light alloy and dense metal welded aircraft structural components;
- d) have achieved a satisfactory standard, acceptable to the CAA, in the examination detailed in paragraph 2 of this Supplement.

2 Examination Syllabus

2.1 **Written Examination.** The written examination will include questions on the following:

- a) The elementary principles of radiographic theory and how these principles are related to the practical techniques of radiography;
- b) The photographic aspects of radiography;
- c) Safety and protection against radiation hazards.

2.2 **Practical Test.** The practical test will consist of the following:

- a) The development and recording of techniques for the inspection of typical aircraft structures including structural components;

- b) The development and recording of techniques for the inspection of welded structural components;
- c) The practical application of the techniques;
- d) Processing the radiographs.

2.3 **Interpretation Test.** The interpretation test will consist of the following:

- a) The co-relation of the radiographs with the report;
- b) Identification of the various features in the radiographs.

2.4 **Appropriate Parts of the Examination.** The following parts are appropriate to the approval sought:

- a) The written examination (paragraph 2.1) shall be undertaken by all radiographers.
- b) Practical Test. Paragraphs 2.2 a), c) and d) are applicable where approval is sought for inspection of aircraft structures and structural components. Paragraphs 2.2 b), c) and d) are applicable where approval is sought for inspection of welded structural components.
- c) An interpretation test (paragraph 2.3) shall be undertaken by all radiographers.

3 Re-Examination

The CAA may require re-examination of a radiographer at times which will be notified in writing to the approved Organisation.

Chapter A8-12 Procedures for Approval of Organisations Concerned with Ultrasonic Inspection of Aircraft during Maintenance and Overhaul

1 Introduction

Organisations engaged in ultrasonic inspection of aircraft during overhauls, repairs, replacements, modifications and inspections may be approved to provide reports and certify compliance in respect of this work, subject to compliance with the procedures set down in this Chapter A8–12 and the Supplement.

2 Application

Organisations seeking approval, or the extension of an existing approval, for the ultrasonic work described in paragraph 1, shall make written application to the CAA Safety Regulation Group.

3 Requirements for Grant of Approval

- 3.1 The Ultrasonic Inspection Department shall be organised under the direction of a person who has satisfied the requirements of the Supplement to this Chapter.
- 3.2 All ultrasonic inspections shall be directly supervised, and the final certification made by a person who has satisfied the requirements of the Supplement to this Chapter. Certification shall be in a form agreed by the CAA.
- 3.3 Ultrasonic inspections concerned with the inspections required in approved Manuals, approved Maintenance Schedules, the CAA Mandatory Aircraft Modifications and Inspections Summary, and the Foreign Airworthiness Directives volumes, shall be made in accordance with techniques approved by the manufacturer, or an appropriately approved Organisation unless an alternative technique has been accepted by the CAA.

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Supplement 1 to A8-12 Procedures for Approval of Organisations Concerned with Ultrasonic Inspection of Aircraft During Maintenance and Overhaul

1 Requirements for the Ultrasonic Technician

- 1.1 The following shall be satisfied by the person(s) required under paragraphs 3.1 and 3.2 of Chapter A8-12:
- be able to read, write and converse in the English language;
 - have experience, acceptable to the CAA, of a minimum of one year dealing with practical inspection of aircraft, or alternative training or experience acceptable to the CAA;
 - have satisfactorily completed a course of instruction in ultrasonic flaw detection acceptable to the CAA;
 - produce evidence, satisfactory to the CAA, of at least six months' recent work in ultrasonic inspection of aircraft;
 - have achieved a satisfactory standard, acceptable to the CAA, in the examination detailed in paragraph 2 of this Supplement.

2 Examination Syllabus

- 2.1 **Written Examination.** The written examination will include questions on the following:
- Modes of ultrasonic propagation in solids and liquids;
 - Reflection, refraction, absorption and scattering of ultrasonic waves;
 - Piezo-electric crystals: basic essentials of the construction and mode of operation of ultrasonic probes;
 - Methods of coupling ultrasonic probes to the workpiece;
 - Functions of the externally accessible controls normally fitted to ultrasonic flaw detection equipment;
 - Scope and limitations of ultrasonic flaw detection;
 - Application of the reflection and transmission method of testing aluminium alloy and steel workpieces, including welds;
 - The use of standard reference Blocks for checking sensitivity of equipment and estimation of defect size and depth;
 - The recognition of defect indications and the interpretation of these;
 - Definition of the term "decibel" as applied to a unit of voltage (or amplitude) difference: the use of attenuators;
 - Recognition of false indications.

NOTE: The approach to the above subjects should be practical rather than mathematical.

- 2.2 **Practical Test.** Ultrasonic flaw detection shall be carried out on a given number of specimens using contact scan techniques. The test on one specimen will include the estimation of defect size by means of standard reference Blocks (flat bottom hole type) and suitable attenuators.
- 2.3 **Technical Preparations.** Ultrasonic flaw detection contact scan techniques, shall be prepared in respect of a number of specimens as follows:
- a) Comprehensive inspection of one specimen;
 - b) Inspection for a particular defect in the remaining specimens including the design of suitable test pieces.

3 Re-Examination

The CAA may require re-examination of an ultrasonic technician at times which will be notified in writing to the approved Organisation.

Chapter A8-15 Aeroplanes and Rotorcraft not exceeding 2730 kg - Maintenance Organisations - Group M3

1 Introduction (see also Chapter A8-15 Appendix 1)

1.1 The requirements of this Chapter A8-15 are applicable to the Approval of Organisations to make recommendations for the renewal of a Certificate of Airworthiness in respect of aeroplanes and rotorcraft having a Maximum Total Weight Authorised (MTWA) not exceeding 2730 kg.

1.2 An Organisation may, subject to compliance with the requirements of this Chapter, be approved in respect of aeroplanes and/or rotorcraft certificated in the Transport Category (Passenger), the Transport Category (Cargo), the Aerial Work Category and the Private Category:

a) to undertake assessments and make recommendations to the CAA in respect of the renewal of Certificates of Airworthiness in accordance with Chapter A3-4 (B3-4) Group I and Group II for aeroplanes and/or rotorcraft;

b) to perform, in respect of the maintenance of aircraft (see Chapter A6-2 (B6-2), such maintenance checks (see Chapter A8-15 Appendix 1) as are prescribed in the Approved Maintenance Schedule and which are required to be completed by an Organisation approved by the CAA for the purpose;

c) to perform the Star Inspection for aeroplanes and rotorcraft, as specified in Procedure No.2 of Chapter A3-4 (B3-4).

NOTE: With respect to sub-paragraph 1.2 b), any aircraft used for Commercial Air Transport must be maintained and released to service by an Organisation appropriately approved in accordance with JAR-145.

2 Application

Application for Approval shall be made on Form AD 457 and Form AD 461, copies of which may be obtained from the CAA Safety Regulation Group, which when completed in duplicate should be returned.

NOTE: Organisations currently Approved for the maintenance/overhaul of aircraft in accordance with JAR-145 or BCAR Sub-Section A8, which require Approval in accordance with this Chapter, should also follow this procedure.

3 Grant of Approval

3.1 **Personnel** (see Chapter A8-15 Appendix 1, paragraphs 2 and 3)

3.1.1 The Applicant shall nominate, for CAA acceptance, appropriately qualified personnel who will be employed specifically for the purposes of sub-paragraphs 1.2 a), b) and c), as follows:

a) The holder of a United Kingdom BCAR Section L Aircraft Maintenance Engineers' Licence, with Type Ratings in at least both Categories A and C, with acceptable experience in the light aircraft maintenance field, who will be responsible for recommendations to be made in accordance with sub-paragraph 1.2 a).

NOTE: More than one such person may be nominated.

b) Any additional holders of United Kingdom BCAR Section L Aircraft Maintenance Engineers' Licences with Type Ratings appropriate to certifications to be made in accordance with sub-paragraphs 1.2 b) and c), and who will be responsible for making such certifications.

3.1.2 Where, in some instances certifications under sub-paragraphs 1.2 b) and c), including BCAR Section L Categories X and R, may need to be made by personnel not permanently employed by the Organisation, the Applicant shall satisfy the CAA that acceptable arrangements exist between the particular person and the Organisation.

3.1.3 The Applicant shall satisfy the CAA that licensed and unlicensed staff are of sufficient numbers and are suitably experienced to undertake the volume and type of work appropriate to the certifications to be made. (See A8–15, Appendix 1, paragraph 3.3).

3.2 **Organisation and Procedures** (see A8–15, Appendix 1, paragraph 3)

3.2.1 The Applicant shall satisfy the CAA that the technical and administrative procedures in respect of:

a) matters affecting continued airworthiness;

b) evaluation of technical information issued by manufacturers and Airworthiness Authorities, are compatible with the likely volume of work.

NOTE: Due account should be taken of the guidance contained in CAP 520 (Light Aircraft Maintenance).

3.2.2 Where an Organisation is already Approved in accordance with BCAR Sub-Section A8 or JAR-145 requirements, procedures relating to sub-paragraphs 3.2.1 a) and b) shall be added to the Exposition or associated procedures manual of the Organisation.

3.2.3 Where applicable the terms of reference of persons nominated in accordance with paragraph 3.1.1, as applicable to the activities covered by the Approval, shall be the subject of agreement by the CAA.

3.2.4 An Organisation, approved in accordance with this Chapter, placing orders on suppliers and unapproved organisations shall satisfy itself that the origin of each item supplied is identified and that the item is acceptable and suitable for the intended purpose.

NOTE: CAA Approved Organisations when undertaking work outside their terms of Approval are deemed to be unapproved.

3.3 **Accommodation**

3.3.1 Hangar accommodation, with adequate lighting and power supplies and of sufficient size to house the size and number of aircraft anticipated to be in work at any one time, shall be provided. Approval of the main premises may, for a particular case and with the agreement of the CAA, be extended to cover other premises.

3.3.2 The accommodation shall include suitable areas where publications and drawings may be studied and where aircraft maintenance documents may be prepared and stored.

3.3.3 Adequate storage arrangements, together with the necessary records and systems for controlling aircraft components, parts and materials shall be provided.

3.4 **Equipment**

3.4.1 Adequate equipment, including general maintenance equipment and specialised tools shall be provided.

3.4.2 The calibration of test equipment shall be checked as frequently as is necessary to maintain confidence in the accuracy of the equipment.

3.5 **Publications and Information**

- 3.5.1 The Organisation shall make available to the staff concerned, the necessary technical data, e.g. CAA publications, approved manuals, specifications, data sheets and related literature appropriate to the class of work for which Approval is sought.
- a) The technical data shall consist of that issued from the manufacturers or Type Certificate Holder by way of maintenance manuals, service bulletins, service information and other forms of instructions for continued airworthiness.
 - b) Written agreements shall be made by the Organisation with the appropriate manufacturers, or other recognised suppliers, for the supply of amendments and changes to the publications held. A suitable system for amending the documents shall be provided.
 - c) Where technical data is held on loan it shall be the responsibility of the user to ensure that the documents concerned are amended up to date and available when needed.

4 **Continuation of Approval**

- 4.1 The Organisation shall be maintained to the standard necessary to undertake the work for which it is Approved. The CAA shall have access to the Organisation at agreed times and dates for the purpose of assessing this standard.
- 4.2 Changes of personnel nominated in accordance with paragraph 3.1.1 shall be notified to the CAA in writing for acceptance.
- 4.3 The CAA shall be consulted where there is any difficulty about the interpretation of the requirements, the associated procedures, or on any airworthiness matter which involves new problems or techniques.
- 4.4 The CAA may revoke, suspend, or vary the Terms of Approval if the conditions prescribed for Approval are not maintained.

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Appendix 1 to A8-15

Assessment of Suitability for Approval

1 Introduction

The purpose of Approval in accordance with Chapter A8-15 is to ensure that, as a condition of renewal of the Certificate of Airworthiness at the end of a three-year period of validity, or upon the subsequent application for renewal:

- a) for piston-engined aeroplanes and rotorcraft below 2730kg MTWA, certificated in the Transport, Aerial Work or Private Categories;
 - i) the Annual Check, which is coincident with the Star Inspection, prescribed in the Approved Aircraft Maintenance Schedule and;
 - ii) the Star Inspection (See BCAR Chapter A3-4, paragraph 4)

or;

- b) for turbine-engine aeroplanes and rotorcraft below 2730kg MTWA, certificated in the Transport, Aerial Work or Private Categories,

the required aircraft survey, inspections and review of the aircraft records, as required by Chapter A3-4 (B3-4), paragraph 3, Procedure No.1, will have been completed only at an Organisation appropriately Approved by the CAA for the purpose.

2 Personnel

The recommendation for the renewal of the Certificate of Airworthiness shall be made after consideration of, and compliance with, the requirements of Chapter A3-4 (B3-4), Group I or Group II as appropriate.

The Star Inspection, where applicable, shall be completed by holders of United Kingdom, BCAR Section L Type Rated Licences appropriate to the inspection.

As a minimum, the Organisation should have on its staff, personnel holding United Kingdom BCAR Section L Type Rated Licences in Categories A and C covering the aircraft types involved. In particular the person nominated in accordance with A8-15, paragraph 3.1.1 a) will have to hold an appropriate United Kingdom BCAR Section L Aircraft Maintenance Engineers' Licence with Type Ratings in at least Categories A and C, with experience acceptable to the CAA.

3 Organisation and Procedures

- 3.1 The Applicant will have to satisfy the CAA that the management of the Organisation will be conducted with due regard to the needs of continuing airworthiness.
- 3.2 The Organisation will have to be such, in the opinion of the CAA, as to ensure that in all matters affecting airworthiness full and efficient co-ordination exists between individual certifying aircraft maintenance engineers and other members of the staff.
- 3.3 In all areas of direct CAA delegated functions, e.g. the evaluation and reporting of flight tests, the Applicant will have to satisfy the CAA that the persons nominated to exercise the authority are competent and adequately experienced. Suitable procedures, including provision for verification, will have to be defined and applied to ensure the accuracy of documents prepared for such delegated functions.

- 3.4 When assessing an Organisation for Approval the CAA will examine the methods used to control maintenance and this will include:
- a) an assessment of the information contained in Form AD461;
 - b) the structure of the Organisation;
 - c) the number of licensed aircraft maintenance engineers employed and the scope of the licences, or where applicable certifying authorisations, held by these engineers, appropriate to the Approval;
 - d) the adequacy of the facilities, accommodation and equipment necessary to cover those types of aircraft appropriate to the Approval;
 - e) the holding of technical publications and data for those types of aircraft appropriate to the Approval;
 - f) the methods of assessing information promulgated by manufacturers and Airworthiness Authorities to ensure continued airworthiness;
 - g) procedures for the preservation and correlation of technical records and recommendation reports.

Chapter A8-18 Airship Maintenance Organisations – Group M4

1 Introduction (see A8-18 Appendix 1)

- 1.1 Pursuant to Articles 10 and 12 of the Air Navigation Order (ANO), an Organisation may, subject to compliance with the procedures set out in this Chapter A8-18, be Approved (see sub-paragraph 1.1.3 b)) to certify that the maintenance of specific airships has been carried out in conformity with acceptable standards/specifications and CAA requirements. The Approval, when granted, will apply to the whole Organisation headed by the Chief Executive.
- 1.1.1 For the purposes of this Chapter 'Approval for Maintenance' covers the completion on airships of the requirements of an Approved Maintenance Schedule, together with associated activities in compliance with the requirements of the CAA and the appropriate manufacturers' technical publications.
- 1.1.2 Approval for Maintenance permits Organisations which are responsible for all or part of the maintenance of airships, to certify the work completed on those airships. Organisations desiring to undertake maintenance of such airships will have to be Approved for that purpose.
- 1.1.3 For the purposes of this Chapter the following apply:
- a) Reference to 'Notice No. 3' or 'Notice No. 10' shall mean reference to the current issue of Airworthiness Notice No. 3 or No. 10, published by the CAA;
 - b) Reference to 'Approval' or 'Approved' means the approval of something, or that which is approved, by the CAA in accordance with the Requirements.
- 1.1.4 Associated reference documents published by the CAA are:
- a) Chapters A6-2 (B6-2) and A6-7 (B6-7) of this BCAR Section 'A' and Section 'B';
 - b) BCAR Section L Licensing – Aircraft Maintenance Engineers;
 - c) Airworthiness Notices No. 3 and No. 10.

2 Application

Application for Approval shall be made on Form AD 457, copies of which may be obtained from the CAA Safety Regulation Group, when completed, the form should be returned to the same address.

NOTE: Notes on the preparation of Expositions (see paragraph 3.3) are contained in Chapter A8-1 Appendix No. 1.

3 Grant of Approval (see Chapter A8-18 Appendix 1)

- 3.1 **Approval Procedure.** In order to enable an assessment of the suitability of the Organisation for Approval to be made, the Applicant shall comply with this paragraph 3. The information so provided and the Organisation and procedures so set up will be evaluated against, and shall show compliance with, the provisions of the Appendix to this Chapter.

3.2 **Nominated Personnel** (see Chapter A8–18 Appendix 1, paragraph 2.1). The Applicant shall nominate the following:

- a) A senior person, or group of persons, whose functions include responsibility for the co-ordination of all appropriate departments so as to ensure compliance with the relevant airworthiness requirements, and who will be directly responsible to the Chief Executive for this purpose;
- b) Heads of Departments and such other senior staff as are appropriate to the class and the level of work for which Approval is sought;
- c) Persons authorised to issue Personal Authorisation Certificates (see paragraph 3.4.1);
- d) Signatories to Certificates of Maintenance Review.

3.3 **Exposition of the Organisation.** The Applicant shall provide two copies of an Exposition (see Note to 2) which shall include information on the subjects detailed in a) to h). Organisations holding Approval under Chapter A8–3 and seeking Approval under this Chapter A8–18 shall extend their Exposition to include additional information required for Approval in accordance with this Chapter A8–18.

- a) A statement signed by the Chief Executive confirming that the Exposition defines the Organisation's procedures and associated personnel responsibilities, and will be complied with at all times;
- b) A list of the persons nominated in accordance with paragraph 3.2;
- c) The terms of reference of the persons nominated in accordance with paragraph 3.2 as applicable to the activities covered by the Approval. The specific subjects on which these persons are authorised to deal direct with the CAA shall be defined within the terms of reference;
- d) An Organisation chart showing the associated chains of responsibility of the persons nominated in accordance with paragraph 3.2;
- e) The scope of the facilities for the maintenance of airships, together with information on the availability of equipment essential for, and/or peculiar to, the type(s) for which Approval is sought;
- f) Details of the systems and procedures for the control of matters, including Quality Control, directly affecting continuing airworthiness (see Chapter A8–18, Appendix 1 paragraphs 3 and 4);
- g) Details of training programmes appropriate to the Approval, together with details of the training facilities which will be used (see Chapter A8–18, Supplement No.1);
- h) Any further matters which the CAA prescribes as a result of initial assessment.

3.4 **Organisation and Procedures.** The Organisation and procedures associated with the Approval shall ensure that compliance is shown with this paragraph 3.4.

3.4.1 **Authorisations** (see Chapter A8–18, Supplement No. 2). Instructions for the issue of authorisations to sign Certificates of Release to Service and Certificates of Maintenance Review shall be such as to ensure that:

- a) personal Authorisation Certificates are signed only by persons nominated in accordance with paragraph 3.2 and are issued only to personnel who comply with the appropriate requirements prescribed in Chapter A8–18, Supplement No. 2. Such Authorisations state the airship type(s) and systems for which the Authorisation is valid and the extent of certification authority granted;

- b) each Personal Authorisation Certificate is identified by the Approval Reference of the Organisation, and by a statement/code uniquely related to the task;
- c) where a system of coding is used to indicate the extent or type of certification authority, such coding system is not changed except by agreement with the CAA;
- d) for each Personal Authorisation Certificate issued, a related record is maintained which contains details of the supporting training successfully completed, and the examinations and assessments conducted to determine the scope of the Authorisation;
- e) a record of any temporary Personal Authorisation Certificates issued is maintained which contains details of the persons authorised, the reason for issue, and the person who authorised the issue (but see a));
- f) Personal Authorisation Certificates do not exceed 95 mm x 145 mm when folded, take the form of, and contain the information contained in, Figure 1 Chapter A8-18 Supplement No.2;
- g) inspection stamps, of a type and design Approved by the CAA, are issued to each authorised person for his individual use, and a record of the stamps issued is maintained;
- h) records are not destroyed or dispersed without the written agreement of the CAA.

3.4.2 **Publications and Information.** The Organisation shall hold and make available to personnel, both CAA and other technical publications appropriate to the class of work covered by the Approval. Suitable arrangements shall be made to ensure that these documents are kept amended and up-to-date.

3.4.3 **Issuance of Certificates**

- a) Instructions governing the issue of Certificates of Maintenance Review shall be such as to ensure that the following are observed before a certificate is issued:
 - i) That the airship has been maintained in accordance with both the Approved Maintenance Schedule and the maintenance procedures as defined in the Exposition;
 - ii) That any required Certificates of Release to Service have been completed and certified by properly authorised personnel;
 - iii) That any additional work requirements, including mandatory inspections and Airworthiness Directives, as defined in the work programme issued by the Approved Organisation for the specific check being certified have been satisfactorily completed;
 - iv) That defects (recorded in both the Technical Log and in the course of inspections completed during the specific check) have been satisfactorily rectified and certified or, where rectification cannot be completed, a deferment concession has been issued by a person authorised by the Approved Organisation for this purpose;
 - v) That a complete record of all documents relevant to the maintenance tasks performed has been completed and certified by appropriately authorised personnel.
- b) Certificates of Release to Service shall be issued in accordance with the provisions of Chapters A6-2 (B6-2)/A6-7 (B6-7).

3.4.4 **Technical Records.** Technical records shall be maintained in accordance with the ANO, BCAR and the procedures laid down in the Exposition.

3.5 **General**

- 3.5.1 Personnel in all appropriate technical departments shall be of sufficient number and so experienced that they may reasonably be expected to efficiently undertake the likely volume of work appropriate to the Approval.
- 3.5.2 Personnel shall be provided with adequate accommodation, facilities and equipment for the effective performance of their duties. Working and environmental conditions shall be controlled as necessary to ensure compatibility with the work undertaken.
- 3.5.3 The CAA shall have the right to witness tests or inspections in any way associated with establishing the airworthiness of an airship, engine or any part thereof appropriate to the Approval.
- 3.5.4 An Organisation approved as a Group M4 Organisation placing orders on suppliers and unapproved organisations shall satisfy itself that the origin of each item supplied is identified and satisfy itself that the item is acceptable and suitable for the intended purpose.

NOTE: CAA Approved Organisations when undertaking work outside their terms of Approval are deemed to be unapproved.

4 Continuation of Approval

- 4.1 The Organisation shall be maintained to the standard necessary to undertake the work for which it is Approved, and the CAA shall, at all reasonable times, have access to the Organisation for the purpose of assessing the standard at any given time.
- 4.2 The CAA shall be consulted where there is any difficulty about the interpretation of the requirements, the associated procedures, or any airworthiness matter which in the opinion of the Organisation involves new problems or techniques.
- 4.3 A proposed change of the Chief Executive shall be notified to the CAA in writing. The CAA may require the Organisation to supply further information in order that it may satisfy itself as to the suitability of the proposed new Chief Executive, insofar as it may affect the Approval.
- 4.4 Changes of personnel nominated in accordance with 3.2 shall be notified to the CAA in writing for acceptance.
- 4.5 The Exposition (see 3.3) shall be reviewed periodically by the Organisation. Changes arising from the review and changes arising from supervisory visits by the CAA shall be forwarded to the CAA for Approval.
- 4.6 The CAA may revoke, suspend or vary the Terms of Approval if the conditions prescribed for Approval are not maintained.

Appendix 1 to A8-18 Assessment of Suitability for Approval

1 Introduction (See A8-18, 1)

Approval for Maintenance provides for the certification of work carried out on an airship to be made by persons who are so authorised by the Approved Organisation by whom they are employed. At periods specified in the Approved Maintenance Schedule a person appropriately authorised by the Approved Organisation will be required to issue a Certificate of Maintenance Review to release the airship for service. The periods will be related to particular scheduled maintenance checks forming part of the overall check cycle.

2 Considerations (See A8-18, 3)

The provisions of this paragraph 2 will be taken into account in the assessment of suitability for Approval.

2.1 **Nominated Personnel** (See A8-18, 3.2). The Applicant will have to satisfy the CAA that the persons nominated in accordance with A8-18, 3.2 are capable and responsible persons, and written evidence of their qualifications and experience will have to be supplied. The Applicant will also have to satisfy the CAA that such persons are conversant with CAA requirements and procedures insofar as they affect the particular matters for which they are responsible.

2.2 Procedures and Organisation (See A8-18, 3.3 a))

2.2.1 The Applicant will have to satisfy the CAA that the management of the Organisation will be conducted with due regard to the needs of airworthiness and the character of airworthiness requirements.

2.2.2 The Organisation will, in the opinion of the CAA, have to be such as to ensure that in all matters affecting airworthiness, full and efficient co-ordination exists within each department and between related departments. Methods of Quality Control and Quality Assurance (see 3) shall be employed to ensure co-ordination of effort and the achievement of acceptable airworthiness standards throughout the Organisation.

2.2.3 Successful maintenance depends largely upon effective work control and inter-trade liaison during its completion, and therefore, the CAA will, as part of the Approval process, need to satisfy itself that the system of maintenance control and management covers these particular matters (see 4).

3 Quality Control (see A8-18, 3.3 f))

The system for Quality Control and Quality Assurance set up should be such that the prime objective is to maintain a continuous check on the effectiveness of the maintenance Organisation and on the procedures and systems employed to ensure that all CAA requirements as well as those of the Organisation itself are met.

3.1 **Definitions.** The following definitions apply:

a) **Quality.** The quality of a product is the degree to which it meets the requirements of the customer. With manufactured products quality is a combination of quality of design and quality of manufacture.

- b) **Quality Control.** A management system for programming and co-ordinating the Quality maintenance and improvement efforts of the various groups in an Organisation, so as to permit the completion of airship maintenance in compliance with both CAA requirements and any specific company or customer requirements affecting airworthiness.
 - c) **Quality Assurance.** Overall authority for the supervision of Quality standards, enabling those standards set by the system of Quality Control to be enforced.
- 3.2 The implementation of the Quality Control requirement should normally be assigned to a Quality Manager who will be responsible for the operation of Quality Assurance tasks utilising, as necessary, a staff of Quality Assurance engineers, who should be appropriately qualified and experienced, and of sufficient number, to properly undertake the work performed by the Quality Department.
- 3.3 The Quality Control system should include formal procedures for notifying the results of Quality Assurance tasks to those persons required and empowered to provide corrective action, as appropriate. Such persons should also be required by the system to inform the Quality Manager of the corrective action taken, or to be taken.
- 3.4 Various methods can be employed by which effective Quality Control and Quality Assurance can be achieved, and these depend, in part, upon the size, scope and complexity of the Organisation concerned and the amount and level of work undertaken. In recognition of this, the CAA considers that an Organisation should produce methods which achieve the intent of the requirements to most effectively suit its needs.

4 Maintenance Control (See A8-18, 3.3 f))

When assessing an Organisation for Approval the CAA will examine the systems used to control all maintenance activities and this will include, where applicable:

- a) Organisation structure;
- b) Co-ordination within and between departments on airworthiness matters;
- c) Qualifications and experience of engineering management;
- d) Number and experience of engineering staff, both departmentally and in total;
- e) Procedures for the authorisation of persons to make certifications, including training programmes, required standards, examination procedures, records and the associated methods of control;
- f) The system by which the continuing validity of Personal Authorisation Certificates are assessed and subsequently revoked for any reason;
- g) Planning of maintenance manpower allocation and control;
- h) The implementation, review and amendment of the Approved Maintenance Schedule(s);
- j) The procedures for the assessment and incorporation of Service Bulletins, modifications and manufacturers' technical information;
- k) The management and operation of reliability programmes;
- l) Maintenance facilities and equipment;
- m) Component and material control;
- n) Technical records;

- o) Technical publications and drawings;
- p) Concession assessment and implementation instructions;
- q) Defect control and management;
- r) Specialised support arrangements, e.g. non-destructive testing;
- s) Spares acquisition and disposition;
- t) Quality Control and Assurance.

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Supplement 1 to A8-18 Training Programme and Facilities

1 General (See A8-18, 3.3 g))

- 1.1 Training of personnel may be Approved by the CAA as an integral part of the Approval or separate Organisations may be Approved to carry out specific training programmes.
- 1.2 Where all or part of the training programme is sub-contracted to an outside Organisation which is not itself Approved for the training, it is the responsibility of the Organisation Approved for maintenance to ensure that the standard of training is acceptable to the CAA and continues to be so.
 - 1.2.1 The liaison procedure between the Training Organisation and the Approved Organisation in respect of examination standards shall be to the satisfaction of the CAA.
- 1.3 Suitable follow-on training shall be arranged both to ensure a supply of any necessary replacement staff and to ensure that personnel are made aware of modifications to the airship and changes in the maintenance procedures.

2 Organisation and Equipment

- 2.1 The experience and qualifications of the person in charge of the training and his deputy shall be such as to ensure that the training will be conducted in a satisfactory manner.
- 2.2 Staff numbers, qualifications and experience shall be appropriate to the intended training programmes. Practical maintenance training shall be supervised by experienced aircraft maintenance engineers, and shall be recorded. A staff training policy shall be agreed with the CAA.
- 2.3 Suitable accommodation shall be provided for the administrative and training staff.
- 2.4 The number of lecture rooms and demonstration areas shall be satisfactory when considered in relation to the intended training programme. Heating, lighting, ventilation and noise insulation shall be to acceptable standards.
 - 2.4.1 Classroom furniture, wallboards and equipment shall be of an acceptable pattern.
 - 2.4.2 Storage accommodation shall be provided for equipment not in use.
- 2.5 Appropriate teaching, demonstration and projection facilities shall be available and shall be maintained to a satisfactory standard.
- 2.6 Appropriate library facilities shall be provided for the use of training staff and trainees. The facilities shall include relevant airship maintenance manuals, official publications, and such basic educational books as may be required.
 - 2.6.1 Suitable arrangements shall be made to ensure that technical publications contained in the library are up to date and reflect current amendment standards.
 - 2.6.2 Where the Training Organisation is Approved, either directly or indirectly, significant changes of personnel, organisation, or training syllabi shall be agreed with the CAA.
 - 2.6.3 In order to satisfy itself that the standard of Approved Training is being maintained at a satisfactory level, the CAA shall have reasonable access to the Organisation and its records. Periodic visits will be made and examination standards will be checked.

3 Training and Training Programmes

The provisions of this paragraph 3 are applicable to training Approved in accordance with 1.1. They should also be taken into account where training is sub-contracted as in 1.2.

- 3.1 Training shall normally consist of theoretical and practical periods of syllabi and programmes acceptable to the CAA.
- 3.2 The training programme shall, in addition to providing for training on the relevant airship and systems, provide for training in any necessary special techniques required and in the procedures and practices of the Approved Organisations.
- 3.3 Training programmes and their administration shall comply with the following:
 - a) Suitable standards for course entry and final performance shall be specified by the Training Organisation in respect of each syllabus;
 - b) Lecture notes, diagrams and any other instructional material shall be substantially accurate at the time they are handed out. Where an amendment service is not to be provided, a written warning must be given to this effect;
 - c) Examinations shall be held at the conclusion of each distinct phase or section of the training. A final examination shall be held covering the complete syllabus;
 - d) The content, type, and acceptance standard of examinations shall be agreed with the CAA;
 - e) Examination questions in use shall be sufficient to give full coverage of the phase or section of the syllabus, and shall be appropriate to the expected final performance of the trainee;
 - f) The questions set in particular examinations shall be controlled by supervisory staff, and not by staff directly concerned with the instruction;
 - g) A regular programme of examination question analysis and revision shall be arranged under the direct supervision of a senior member of the training staff;
 - h) Examination papers and records shall be the responsibility of the Approved Organisation, and shall be stored in locked cabinets;
 - j) Records shall not be destroyed or dispersed without the written agreement of the CAA.

Supplement 2 to A8-18 Authorisation of Personnel

1 Persons Authorised to Issue Certificates of Release to Service

(See A8-18, 3.4.1.)

- 1.1 Authorisations to issue Certificates of Release to Service shall be granted only to persons who comply with a) to d):
- a) Be age 21 or over;
 - b) Be the holder of a current United Kingdom Aircraft Maintenance Engineers' Licence Without Type Rating valid in the appropriate Categories and Sub-division;
NOTE: 'Appropriate Category' means the Category of Licence defined in Section L which would, were the certification of the work not covered by the Authorisation, be mandatory when account is taken of both Airworthiness Notices No. 3 and No. 10.
 - c) Have completed a course of training which complies with A8-18 Supplement No. 1, and relevant to the scope of the Authorisation with satisfactory examination results;
 - d) Have been trained and have passed an examination on relevant company procedures.
- 1.2 Where a person already holds at least an Authorisation on the airship type concerned, the CAA may approve training and examination standards different from those of 1.1 c) and d) in respect of limited and simple tasks, and may permit the issue of Authorisations to persons who do not entirely comply with 1.1 b). The conditions and scope of such Authorisations shall be agreed by the CAA with the Approved Organisation.

2 Persons Authorised to Issue Certificates of Maintenance Review

- 2.1 Authorisation to issue Certificates of Maintenance Review shall be granted only to persons who comply with a) to d).
- a) Be the holder of a current United Kingdom Aircraft Maintenance Engineers' Licence Without Type Rating valid in at least two Categories in the appropriate Categories and Sub-divisions (other than Category 'X' Compasses);
 - b) Have at least 8 years aviation engineering experience which includes at least 2 years recent experience involving the maintenance of airships and/or balloons;
 - c) Hold a position within the Approved Organisation compatible with the responsibilities involved;
 - d) Have successfully completed familiarisation training on the airship type for which the Authorisation is to be granted, have been trained in the procedures of the Organisation, and have achieved the agreed standard in an examination set by the Organisation in conformity with A8-18 Supplement No. 1 and based upon i) to vi):
 - i) The concept of Approval in accordance with Chapter A8-18 and other requirements prescribed by the CAA;
 - ii) The status of the Certificate of Maintenance Review and the responsibilities of a signatory of the Certificate;
 - iii) The form and implementation of the Approved Maintenance Schedule for the type of airship concerned;

- iv) The details of the systems and procedures contained in the Exposition and associated documents, together with the requirements of the Organisation for their implementation;
- v) The maintenance support systems which are related to continuing airworthiness, e.g. reliability programmes, defect control, production control, development engineering, training, certification authority and modification control;
- vi) The form and use of the airship Technical Log, deferred defect log, fuel and instrument log, and the minimum equipment list.

3 Validity of Authorisations

Authorisations granted in accordance with 1 and 2 shall only be used, subject to their conditions of validity, whilst the holder is in the employ of the Approved Organisation which issued them and the holders licence remains valid. The Approved Organisation shall provide authorised persons with a copy of all Personal Authorisation Certificates issued to them whilst in its employ.

NOTE: Persons authorised to issue Certificates of Release to Service under the terms of the requirements of A8-3 are not acceptable for the purposes of certification under the requirements of A8-18 unless they meet the requirements of A8-18 which are relevant to their function and the appropriate Authorisations are granted under the terms of A8-18.

THIS PAGE INTENTIONALLY BLANK	Serial No.
	THIS AUTHORISATION IS NOT PART OF AN AIRCRAFT MAINTENANCE ENGINEER'S LICENCE
	Name and Address of Organisation (hereinafter referred to as 'the Organisation')
	CAA Approval for Maintenance Ref. No. _____
	Name of Holder
	Aircraft Maintenance Engineer's Licence Number..... is hereby authorised by the Organisation to sign Certificates of Maintenance Review on behalf of the Organisation in respect of the following Aircraft Type(s) and Variant(s):
	Date and Stamp
	1
	2
	2
	AND
	to sign Certificates of Release to Service on behalf of the Organisation in respect of the following:
	Date and Stamp
	1
	1

Initials of nominated Organisation employee

Figure 1 PERSONAL AUTHORISATION CERTIFICATE

	Date and Stamp	NOTES
2	Initials of nominated Organisation employee	(1) In the event of confirmation of this authorisation being required from the CAA, application should be made to the CAA Area Office responsible for the airworthiness control of the Organisation.
3		
4		(2) Individuals wishing to ascertain further information on the full scope of the authorisations contained herein, should obtain this from the Organisation.
5		
6		
7		FOR CAA USE ONLY
8		I hereby confirm that to the best of my knowledge and belief the person named on this authorisation holds or has held on the dates specified the authorisations detailed.
<hr/> Signature of Holder		Signed for the Civil Aviation Authority
		Date
2		3

Figure 1 PERSONAL AUTHORISATION CERTIFICATE

Chapter A8-20 Approval of Organisations Responsible for the Restoration, Airworthiness Control and Maintenance of Aeroplanes and Rotorcraft of Military Origin – Group E4 and M5

Group E4 (paragraph 1.2.1)

Group M5 (paragraph 1.2.2)

1 Introduction

1.1 The requirements of this Chapter A8–20 are applicable to the approval of organisations to perform the functions specified in paragraph 1.2, in respect of aeroplanes and rotorcraft of military origin.

1.2 An Organisation may, subject to compliance with the requirements of this Chapter A8–20, be approved in one or both of the following Groups in respect of aeroplanes and rotorcraft of military origin that are eligible for the issue of a Permit to Fly.

1.2.1 Group E4

To undertake assessments and provide reports to the CAA in respect of the issue of Permits to Fly in accordance with Chapter A3–7. Approval will be granted for one or more of the following categories:

- a) **Simple:** single piston engine types.
- b) **Intermediate:** multiple piston engine or turbine (single or multiple) engine types with simple mechanical flying controls or with powered controls having an independent back-up system that can enable continued safe flight following failure of the powered system.
- c) **Complex:** all other types, including those having features that require specialised knowledge and/or equipment to maintain, aircraft without independent back-up systems for powered flying controls or having automatic stabilisation systems or electronic engine controls.

NOTE 1: The classification of aircraft types will be the responsibility of the CAA.

NOTE 2: With reference to BCAR Chapter A3-7, the CAA will not necessarily require an A8-20 Group E4 Organisation Approval for the acceptance of simple fixed wing types of up to 2730 kg MTWA.

1.2.2 Group M5

To undertake assessments and to make recommendations to the CAA for the revalidation of Permits to Fly in accordance with Chapter A3-7 and to perform maintenance of aircraft in accordance with this Chapter A8-20, within the scope of work as specified in the exposition. Approval will be granted in respect of one or more of the following categories:

- a) Single piston engine aircraft below 2730 kg MTWA;
- b) Single piston engine aircraft from 2730 kg to 5000 kg MTWA;
- c) Single piston engine aircraft above 5000 kg MTWA and multi piston engine aircraft;
- d) Turbine powered aircraft up to 8000 kg MTWA;
- e) Turbine powered aircraft above 8000 kg MTWA.

NOTE: Consideration will be given to minor variations of the weight limitations in the above groups.

2 Application

- 2.1 Applications for approval shall be made on Form AD457, copies of which may be obtained from the CAA Safety Regulation Group. Form AD457, when completed in duplicate, shall be returned to the same address.

3 Requirements for the Grant of Approval

The requirements for the grant of approval will vary depending upon the Organisation Group, aircraft types and Categories of aircraft for which the approval is requested. (See Chapter A8–20 Supplement 1). The legal entity of and the permanent site for the Approved Organisation shall be in the United Kingdom.

3.1 Nominated Persons

- 3.1.1 The applicant for approval shall nominate the following persons and submit their details in writing to the CAA for assessment:

- a) An accountable manager who has corporate authority for ensuring that all work undertaken by the Organisation will be carried out to the standard required by the CAA;
- b) A senior person, for M5 approval, whose functions will include co-ordination of all appropriate activities to ensure compliance with the relevant airworthiness requirements and the technical content of customers orders insofar as airworthiness may be affected. This person will be able to grant personnel authorisations under the Organisation's approval, that are appropriate to the staff who are to carry out the nominated functions and activities whilst contracted to or in the employ of the Organisation. Such a person shall be directly responsible to the accountable manager;
- c) Persons, for E4 approval, who will be employed for the purposes of establishing the design/build standard in accordance with Chapter A3–7, paragraphs 3.1 d) and 4.4 or 4.5, in respect of paragraph 1.2.1 above;
- d) Persons, for M5 approval, who will be employed for the purposes of making recommendations for the revalidation of Permits to Fly and for the flight testing of aircraft in respect of paragraph 1.2.2 above.

- 3.1.2 The Applicant shall satisfy the CAA that the persons nominated in accordance with paragraph 3.1.1 are capable and responsible persons and written evidence of their qualifications and experience shall be supplied. The applicant shall also satisfy the CAA that such persons are conversant with CAA requirements and procedures insofar as they affect the particular matters for which they are responsible. The CAA shall be satisfied that the management of the Organisation will be conducted with due regard to the needs of airworthiness and the application of airworthiness requirements including the arrangements for any necessary flight testing.

- 3.2 **Sub-Contract Personnel.** Where certifications or design reports need to be made by personnel not permanently employed by the organisation, the applicant shall satisfy the CAA that acceptable arrangements exist between each particular person and the Organisation.

- 3.3 **Organisation Exposition.** The applicant for approval shall provide an Exposition (see Chapter A8–20 Supplements 1, 2 and 3), that will include the following information:

- a) The terms of reference of senior technical personnel as applicable to their activities under the CAA Approval. Any authority to negotiate directly with the CAA on specific subjects shall be defined;
- b) The associated chains of responsibility;
- c) The scope of the restoration/overhaul/repair/maintenance facility together with information on essential inspection and test equipment;
- d) The scope of the design substantiation resources, together with information on procedures, test equipment and records;
- e) The procedures adopted for controlling matters directly affecting airworthiness, and other technical standards which may affect airworthiness including testing and, if applicable, the Quality System;
- f) Identify the individual aircraft types to which the Approval relates;
- g) Any further matters that the CAA decides are necessary arising from any assessment of the organisation.

NOTE: Unless otherwise notified, two copies of the Exposition and all subsequent amendments shall be supplied to the CAA Safety Regulation Group, together with a copy of the distribution list.

3.3.1 Amendments to the Exposition must be approved by the CAA.

3.4 **Organisation Co-ordination**

3.4.1 The Organisation shall, in the opinion of the CAA, be such as to ensure that in all matters affecting airworthiness, full and efficient co-ordination exists, both within the Organisation and with any other relevant organisations, including the CAA.

3.4.2 The staff shall be of sufficient number and experience as may reasonably be expected to undertake the volume and scope of work in the Group, Type and Category for which approval is sought.

3.5 **Quality System**

3.5.1 For organisations to be approved under paragraph 1.2.2 (for M5 approval) a Quality System shall be operated to the satisfaction of the CAA in respect of the Organisation's procedures and for all products handled under the terms of the CAA Approval including in particular any sub-contract arrangements.

3.6 **Accommodation**

3.6.1 Hangar accommodation shall be provided for all maintenance activity, other than pre-flight checks. Suitable hangarage may be accepted by contractual arrangements. This accommodation shall have adequate lighting and power supplies and be of sufficient size to house the maximum number of aircraft expected to be worked on at any one time. Approval of the main premises may, with the written agreement of the CAA, be extended to cover other specified premises.

3.6.2 The accommodation shall include areas suitable for the study, preparation, and storage of publications, design records, drawings and aircraft maintenance documents.

3.6.3 Adequate storage arrangements and systems for controlling aircraft components, parts and materials, together with the necessary records, shall be provided.

3.7 **Equipment**

3.7.1 Adequate equipment, including general maintenance equipment and specialised tools shall be provided.

3.7.2 The calibration of test equipment shall be checked as frequently as is necessary to maintain confidence in the accuracy of the equipment.

3.8 Publications and Information

3.8.1 The Organisation shall make available to the staff concerned the necessary technical data appropriate to the Group, Type and Category for which approval is sought.

a) The technical data shall consist of that issued from the manufacturers or relevant military authorities by way of maintenance manuals, micro fiche, service bulletins and other forms of continuing airworthiness information. English language translations of all foreign language continuing airworthiness information and maintenance data are required to be available.

b) Where the aircraft or equipment is required to be supported by a manufacturer under sub-paragraph 1.2.1 c) 'Complex', then written agreements shall be made between the Organisation and the appropriate manufacturers, or other recognised suppliers, for the supply of amendments and changes to the publications held. A suitable system for amending the documents shall be provided. Copies of the formal agreements shall be included in the Exposition.

c) Where technical data is held on loan it shall be the responsibility of the organisation and the user to ensure that the documents concerned are kept up to date.

d) Technical records (see Supplements 2 or 3). Essential records shall not be destroyed without authorisation from the CAA.

3.8.2 For organisations approved under Group E4, the permanent Company Records of technical investigations performed under the approval shall be such as to provide proper correlation with aircraft Technical Records and an adequate record of the basis and substantiation of the company design reports.

4 Continuation of Approval

4.1 The Organisation shall be maintained to the standard necessary to undertake the work for which it is approved. The CAA shall, at all reasonable times, have access to the organisation for the purpose of assessing the standard at any given time.

4.2 Changes of personnel nominated in accordance with paragraph 3.1.1 shall be submitted to the CAA in writing for acceptance.

4.3 The CAA shall be consulted where there is any difficulty with the interpretation of the requirements, the associated procedures, or on any airworthiness matter that involves new practices or techniques.

4.4 The CAA may revoke, suspend or vary any approval if the conditions prescribed for the approval are not maintained.

Appendix 1 to A8-20

Aeroplanes and Rotorcraft of Military Origin – Approved Organisations – Groups E4 and M5

Exposition General Guide

1 Introduction

- 1.1 This Appendix is intended as a general guide to the compilation of an Exposition as required by Chapter A8–20. Reference should be made to Supplements 2 and 3, as appropriate, for additional detailed Group E4 and Group M5 Exposition content.
- 1.2 Minimum acceptable requirements for compiling an Exposition are not prescribed in this Appendix or the Supplements, but an Exposition based on their content should be presented for acceptance to the CAA.
- 1.3 The Exposition should be produced in a concise form, and its scope, insofar as it applies to the approval sought, should include:
- a) a description of the Organisation’s premises and facilities;
 - b) details of the senior staff responsibilities; and
 - c) the procedures in use to ensure compliance with CAA Requirements and the Organisation’s quality standards.
- The Exposition should be presented in loose leaf form, so that it may be readily amended.
- 1.4 An Exposition cannot be approved until the relevant requirements of Sub-Section A8 have been satisfied. It must be in final draft form before Schedule of Approval can be granted. CAA staff will discuss the Organisation’s preliminary drafts to facilitate agreement of the final content.
- 1.5 The Exposition will form the basis of the CAA Approval of the Organisation and should be written under the following headings:
- a) Identification of the Exposition (see paragraph 2.1);
 - b) Introduction (see paragraph 2.2);
 - c) Premises and undertakings of the Organisation related to CAA Approval (see paragraph 2.3);
 - d) Terms of approval (see paragraph 2.4);
 - e) Personnel (see paragraph 2.5);
 - f) Facilities (see paragraph 2.6);
 - g) Procedures (see paragraph 2.7).

2 Basic Requirements for an Exposition

2.1 Identification

The Exposition should be identified as follows:

- a) Company name, document title and reference number;
- b) Amendment standard by issue number/date/amendment record;

- c) Approval by the Accountable Manager;
- d) Holders of the Exposition, i.e. distribution list;
- e) Official title of person responsible for administration of the Exposition;
- f) Contents List or Index.

2.2 **Introduction**

The introduction should explain the purpose of the document for the guidance of the Organisation's own personnel, and should give general information concerning the Organisation's history and development, in order to provide background information to the CAA. Where appropriate, relationships with other Organisations, forming part of the same group, should be mentioned.

2.3 **Organisation's Premises and Undertakings**

Brief details of premises should be included quoting addresses, approximate floor space, and types of buildings. The scope of the Organisation's aerospace undertakings, at the addresses of the various premises, should be defined.

2.4 **Terms of Approval**

The Exposition will form the basis of the CAA Approval. A concise definition of the work authorised will be prescribed in the CAA Schedule of Approval. It is recommended that the CAA Certificate and Schedule of Approval are reproduced and included in the Exposition. The Schedule of Approval will, in general, be supplemented by Capability Lists. A Capability List must bear an issue number and date and may not be amended without the agreement of the CAA. A note to this effect should be included at the bottom of the page.

2.5 **Personnel**

This section of the Exposition should nominate the persons required in accordance with Chapter A8-20 paragraph 3.1.1, giving their terms of reference within the Organisation and specifically outlining responsibilities for liaison with CAA in accordance with Chapter A8-20 sub-paragraph 3.3 a). As personnel requirements will differ depending on the scope of the A8-20 Approval, reference should be made to the relevant paragraphs of either Supplement 2 or 3. Diagrams showing chains of responsibility of nominated departmental heads and senior technical personnel up to the Accountable Manager should be included. These diagrams and any supporting text should indicate how technical co-ordination throughout the Organisation is affected. A list of Approved Signatories to the relevant Certificates and declarations that are required by BCAR Section A should be included, giving their names, sample signatures and positions in the company, together with details of certification responsibilities.

2.6 **Facilities**

2.6.1 This section should provide information concerning the Organisation's technical facilities and associated essential equipment, which will vary according to the type(s) of activity involved and the specific terms of approval sought.

2.6.2 Under the section devoted to facilities, information under the headings given below, where applicable, should be included. If the information to be given is extensive, the use of Appendices is recommended.

- a) Design/Drawing Office;
- b) Maintenance, Overhaul and Repair;
- c) Storage;

d) Publications and Library;

e) Technical Records.

2.6.3 The headings should be varied to suit the size of the Organisation and its activities.

2.7 **Procedures**

| As individual procedures will differ depending on the scope of the A8-20 Approval, reference should be made to the appropriate paragraphs of either Supplement 2 or 3.

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Supplement 1 to A8-20

Organisations Responsible for the Restoration, Airworthiness Control and Maintenance of Aeroplanes and Rotorcraft of Military Origin

Requirements for the Grant of Approval

1 Introduction

- 1.1 Applicants applying for approval in accordance with Chapter A8–20, paragraph 1.2.1 Group E4, to undertake assessments and provide reports to the CAA in respect of the issue of Permits to Fly, must meet the requirements detailed in paragraph 2 below.
- 1.2 Applicants applying for approval in accordance with Chapter A8–20, paragraph 1.2.2 Group M5, to undertake assessments and to make recommendations to the CAA for the revalidation of Permits to Fly in accordance with Chapter A3-7 and to perform maintenance of aircraft in accordance with this Chapter A8-20, within the scope of work as specified in the Exposition must meet the requirements as detailed in paragraph 3 below.

2 Approval to Undertake Assessments and Provide Reports to the CAA in Respect of the Issue of Permits to Fly

- 2.1 The acceptability of an aircraft for issue of a Permit to Fly is primarily dependent upon a demonstrated experience of safe operation (see Chapter A3–7, sub-paragraph 3.1 d)) and the ability of the Organisation approved for the aircraft types to provide the necessary information and support (see Appendix 1 to Chapter A3–7). The required capability of the Approved Organisation and the consequent investigation into each aspect will depend upon the design complexity of the aircraft type(s) in question. The design complexity is categorised by the three types Simple, Intermediate and Complex (see Chapter A8–20, paragraph 1.2.1). The applicant shall meet the requirements of Chapter A8–20, paragraph 3 in total and be able to satisfy the CAA that, in relation to the aircraft complexity, they are capable of adequately addressing the following items.

2.1.1 All Types

- a) Establishing that the build standard of the aircraft for which a Permit to Fly application is submitted is adequately documented, such that it can be shown to conform to the type design standard and that all modifications, including significant repairs, have been approved by the manufacturer or the Military Authority. (Simple repairs and modifications not thus covered will be investigated by the CAA);
- b) Verifying that the fatigue lives or damage tolerance integrity as applicable, including the effects of structural repairs upon fatigue life, or damage tolerance inspection periods have been established;
- c) Verifying that documentation including Flight Manual or Pilots Notes is available;
- d) Ensuring that any additional modifications and limitations for civil certification are recognised and embodied and if necessary approved by the CAA.

2.1.2 Intermediate Types

In addition to paragraph 2.1.1 above, the Organisation shall have facilities and personnel to establish the eligibility of the type for classification as Intermediate, including:

- a) providing sufficient details of the type service history and accident record for accident statistics to be determined. This may require a breakdown of the accident record during military operations, training, systems/equipment/structural failures etc. Figures obtained will be compared with similar information gathered for types where an acceptable safety record has been demonstrated. Where examples of the type have previously been granted a Permit to Fly, this requirement can be assumed to have been satisfied unless otherwise notified by CAA;
- b) conducting a review of the flying control systems and providing confirmation that failure of any powered flying control system does not prevent continued safe flight;
- c) carrying out a general appraisal of other features that may prevent safe flight or require additional operating limitations.

2.1.3 Complex Types

- a) In addition to the ability to provide information required for All and Intermediate Types, for Complex Types the CAA requires continued airworthiness design support from the manufacturer, or an equivalent Organisation. This support shall be subject to a formal agreement and shall be written into the Exposition. Continued Approval of the Organisation will be predicated on continuation of the design support.
- b) Such formal agreements shall provide for regular consultation between the A8-20 Organisation and each external Organisation involved with support of the aircraft. An A8-20 Organisation may support several aircraft types. Individual aircraft types may require the support of different external organisations. It may therefore be appropriate to cover each type in separate sections or appendices of the Exposition.

3 Approval for Maintenance and Recommendation for Revalidation

3.1 The applicant shall meet the requirements of this paragraph in relation to the categories and types for which it is approved. In addition, the applicant shall be able to satisfy the CAA that the Organisation can:

- a) develop a maintenance programme, which must be in the English language, for each type that is appropriate for the type of conditions of operation undertaken and the utilisation of the aircraft;
- b) establish a procedure for provision and the acceptance of aircraft components or spares giving due regard to their source, condition, traceability and serviceability status;
- c) establish control of a record system for company authorisations issued to staff for certifying aircraft in accordance with Chapter A3-7;
- d) in respect of approvals granted to turbine powered aircraft, arrange for the training agreed with the CAA, for all staff certifying critical work carried out on the aircraft;
- e) establish a Quality Assurance system, controlled by a suitable member of the Organisation, to carry out audits of the relevant company procedures and products.

- 3.2 Where relevant the applicant shall be able to demonstrate that arrangements have been made to maintain and safely operate equipment and systems such as:
- a) ejection seats;
 - b) pilot's Parachute and Personal Survival Packs;
 - c) liquid or gaseous oxygen systems;
 - d) brake arresting parachutes;
 - e) explosive and pyrotechnic systems;
 - f) externally mounted fuel tanks;
 - g) digital avionic systems.
- 3.3 Where the aircraft has been classified as a Complex type at the time of application, the Organisation must be able to demonstrate that it can achieve a level of serviceability, safety, reliability and operational control equivalent to that of the Military Authority or the aircraft manufacturer. The Organisation must have access to spares and required test equipment together with the appropriate facilities. The Organisation must also have available sufficient experienced staff in all the necessary areas of expertise. This can only be achieved with the direct support of the manufacturers or an equivalent Organisation for the complete aircraft, its major components and its equipment.
- 3.4 An A8-20 Organisation shall have appropriate arrangements in place for the overhaul and repair of the components (including powerplant) associated with the types of aircraft for which Approval has been granted. Such an arrangement may take the form of an agreement with another Organisation that is acceptable to the CAA for the purpose.
- 3.5 An A8-20 Organisation shall ensure that arrangements are in place such that defects that have a direct bearing on the airworthiness of an aircraft, its engine(s) or systems are reported to the CAA Safety Investigation and Data Department and to the Regional Office normally responsible for the Approved Organisation.
- 3.6 Where the applicant has applied for the approval of aircraft classified as Complex (Chapter A8-20, paragraph 1.2.1) then, in addition to the preceding requirements, it will be necessary for the Organisation to have a contractual arrangement for support from the aircraft manufacturers or CAA Approved Design Organisations as required by sub-paragraph 2.1.3 a), that will provide continuing airworthiness information or assist in maintaining the reliability and design integrity for the type.

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Supplement 2 to A8-20

Group E4 Approval – Additional Requirements

1 Personnel

- 1.1 The Organisation must nominate the key design staff who are to support its operation. These staff shall be employed under a formal agreement between the Organisation and the staff member concerned, with details of their terms of reference as senior members of the Organisation stated in the Exposition.
- 1.2 The Organisation must have a staff member (see Chapter A8–20 sub-paragraph 3.1.1 b)) nominated as a senior engineer who will be the contact with the assigned CAA Design Liaison Surveyor (DLS) and who will gather and submit evidence to the CAA in order to establish the design/build standard of any particular aircraft (see Chapter A8–20 sub-paragraph 3.1.1 c)). This person shall have adequate qualifications and experience appropriate to the category of aircraft concerned.
- 1.3 Additional part-time staff may be used to provide extra resources, providing that there are appropriate control procedures in the Exposition. A formal agreement must be in place stating the terms of reference of these staff. Such arrangements may be required in order that the Organisation is able to draw upon sufficiently qualified and experienced personnel to cover specific design aspects.
- 1.4 CAA Form AD458 Biographical Details for persons nominated in accordance with the A8–20 Approval should be submitted to the CAA Aircraft Certification Department.

2 Procedures

- 2.1 Any two aircraft of military origin ostensibly of identical type may be of significantly differing design/build standards and fatigue states and for this reason the CAA does not consider that it is generally possible to accept one aircraft as series to another.
 - 2.1.1 Each aircraft requires an individual investigation report from the Approved Design Organisation for the issue, by the CAA, of an Airworthiness Approval Note specific to that aircraft, for supporting the initial issue of a Permit to Fly. However, cross referencing to previous reports for the same type is acceptable in areas where the design/build standard is identical.
 - 2.1.2 The basis upon which aircraft of military origin may qualify for issue of a Permit is in Chapter A3–7 sub-paragraph 3.1 d) and Chapter A3–7 Appendix 1 which lists the evidence required to substantiate applications for Permits. The A8–20 Group E4 Organisation responsible for gathering the evidence necessary for substantiation of submissions to the CAA, is also responsible for subsequently maintaining documentary records covering these submissions.
 - 2.1.3 Particular aspects of the Organisation’s procedures covering the following must be stated in the Exposition.
- 2.2 **Initial Application to CAA and Establishment of Aircraft Complexity Grouping**

The Organisation must make initial application to the CAA for approval of the aircraft early in the process (Form CA3). Where the CAA has not previously accepted an example of the type, the applicant must also propose and obtain the agreement of the CAA to the grouping (see Chapter A8–20 paragraph 1.2.1) of the particular aircraft type. The proposal must contain sufficient information on the design features of the type to justify the grouping recommendation.

2.3 **Establishment of Safety Record** (Chapter A3–7 Appendix 1, paragraph 2.1)

Where the CAA has not previously accepted an example of a type, classified as an Intermediate or Complex aircraft of conventional design and construction, the investigation will commence with a demonstration that the aircraft type has a safety record in military service that is acceptable to the CAA for its intended civil use. Combat losses or those directly attributable to peculiarly military operational causes, such as low-level training may be discounted, but a review employing such judgements should be made by appropriately qualified personnel. The Organisation's procedures should include methods for the presentation of the safety record in terms of total loss and fatal accidents per million flying hours. The safety record shall be presented to the CAA for acceptance prior to commencement of the design/build standard investigation. Such presentations are to be made by the nominated personnel accepted by the CAA for the purpose.

NOTE: It may be possible to establish that particular aircraft showed hazardous characteristics only in specific operational circumstances, or with particular modifications fitted. In that event, it may be that application of additional limitations may render the aircraft type acceptable to the CAA. In the case of complex aircraft, the CAA will require that such submissions are supported by the manufacturer or an equivalent Organisation.

2.4 **Continued Airworthiness Support/Information**

2.4.1 The more complicated the aircraft, the more it will be necessary to have adequate technical and design expertise for the type, in order to maintain the level of continued airworthiness support. In the case of organisations supporting only Simple or Intermediate types, it may not be justifiable to retain full time staff of adequate capability to cover initial approval of a given aircraft. In these cases adequate arrangements must be in place to cover initial approval and ensure continued airworthiness support of each aircraft.

2.4.2 Complex aircraft will require a formal contract of support from the manufacturer or an equivalent Organisation covering each aspect of design. The Exposition of all organisations approved to cover a Complex aircraft must include procedures for the necessary interfaces with the manufacturer or equivalent Organisation providing the support contract for the aircraft and its critical equipment and/or an acceptable Military Authority. The nature and depth of such procedures will be subject to the agreement of the CAA.

2.5 **Establishment of Conformity to Type Design Standard** (Chapter A3–7 Appendix 1, paragraph 2.2)

2.5.1 The Organisation must have a procedure to establish that the individual aircraft conforms to the Type Design Standard to which the established safety record is related. The following aspects will be covered as part of establishing conformity to design/build standard:

a) **Modification State**

- i) The Organisation must ensure that any modifications necessary to maintain the standard of airworthiness are identified and incorporated. This activity is to include compiling records, in the English Language, of the modifications that were considered essential to airworthiness by the Manufacturer and or the Military Operators Engineering Authority. The Organisation must then review the aircraft together with its accompanying documents to verify that all such modifications are embodied. The Exposition must show that the signatory in respect of Chapter A8–20 sub-paragraph 3.1.1 c) will compile a statement

identifying each modification showing embodiment or an acceptable alternative action. This review of modifications must also include military technical and servicing requirements as applicable. Verification of compliance with Mandatory Permit Directives promulgated by the CAA for the type is also required.

- ii) The Organisation must identify and describe all other modifications (whether military or civilian) and present a justification for the acceptance of each by the CAA. (See sub-paragraph 2.6 below.)

b) Fatigue State

The Organisation must:

- i) research and identify fatigue critical components, their lives and accounting procedures;
- ii) check that all such components are identifiably within these limits and are supported by documentary evidence covering the full life of the component;
- iii) obtain CAA agreement to procedures as applied to civil operation of the aircraft (role factors etc.).

NOTE: Statements for submission to the CAA should be signed by nominated personnel (see Chapter A8–20 sub-paragraph 3.1.1 c)).

c) Unusual Features and Specialist Equipment

Unusual features must be brought to the attention of the CAA for assessment. Such features may include, but are not limited to, the means to induce simulated failures intended for military pilot training and jettisonable doors. Special equipment such as ejection seats and jettisonable fuel tanks must be the subject of particular investigation.

d) Published Information

The Organisation must obtain copies (in the English Language) of all documentation necessary to operate and maintain the aircraft. This will normally include the Aircraft Flight Manual or Pilot Notes, the maintenance schedules and the maintenance and repair manuals covering airframe, engine and propeller overhaul. Any specialist systems should also be adequately covered.

e) Identification of Limitations

The Organisation will identify and record normal operating limitations appropriate to the aircraft and observe any limitations that the CAA may determine having regard to the safety of third parties and occupants during intended operations of the aircraft.

NOTE: Limitations must be accepted by the CAA and be supported by published documentation or flight test reports. Examples of circumstances where more restrictive limitations may be applied (subject to agreement of the CAA) are:

- i) where flight testing has identified potentially unsafe characteristics in part of the operating envelope, and operation in that regime must therefore be avoided;
- ii) where the equipment fit renders more restrictive limits appropriate, e.g. restriction of maximum altitude as a consequence of lack of oxygen system;
- iii) where the operator chooses to operate an engine to more restrictive limitations than those published, in order to conserve engine condition.

2.6 Modifications made by the A8–20 E4 Organisation

- 2.6.1 In general the normal CAA procedure as detailed in Chapters A2–5/B2–5 will apply. The E4 Approval granted in accordance with Chapter A8–20 does not confer approval of any activity to design or seek approval for Major Modifications on this class of aircraft. Minor Modifications to aircraft or components are required to be submitted either to the appropriate CAA Regional Office, along with the technical justification to substantiate such a change, or alternatively, be submitted via a CAA Approved Design Organisation of appropriate capability.
- 2.6.2 Significant changes to the aircraft in terms of powerplant changes, propeller type, alternative material specifications or equipment changes may be the subject of Major Modification action and all such applications must be discussed and agreed with the CAA. If the E4 Approved Organisation wishes to undertake such work, this must be supported by a competent design Organisation or person acceptable to the CAA.
- 2.6.3 While the aircraft should conform as closely as possible to the military type design/build standard in respect of which the safety record has been accepted, it is recognised that the operating Organisation may wish to embody modifications in order to simplify operation of the aircraft (such as replacement of non-standard oxygen supply connectors with NATO standard connectors). The A8–20 Group E4 Organisation's Exposition must include a procedure whereby such modifications are identified, defined and submitted to the CAA for approval complete with justification of their airworthiness. They must be adequately defined on modification sheets, to include drawings, circuit diagrams as applicable and changes to Pilots Notes showing any effect on limitations and operations.

- NOTES:**
- 1 In the event that the initial basis of acceptance of an aircraft into service is not known in detail, the basis for the approval of such a modification is subject to the agreement of the CAA (e.g. compliance with appropriate parts of a design code such as EASA Certification Specification CS-23 or CS-27).
 - 2 Material substitution during the manufacture of replacement parts (see paragraph 7 of Supplement 3) or any repairs not demonstrably made in accordance with manufacturers repair manuals, constitute modifications the process of which must be approved by the CAA.

- 2.6.4 Major Modifications to Complex aircraft must be accepted in writing by the Design Organisation or the manufacturer supporting the aircraft prior to CAA Approval.

2.7 Compilation of Company Design Report

- 2.7.1 The Organisation must have a procedure for the compilation and submission of a design report, summarising the results of its investigations, to the CAA prior to the issue of a permission for flight testing. Although the Airworthiness Approval Note (AAN) will be approved and published by the CAA, to minimise administrative work, it is preferred the E4 Organisation provides the report in AAN format. This must summarise all the aspects covered in paragraphs 2.1 to 2.6 as applicable, to support the issue of the Permit to Fly.
- 2.7.2 The procedure of the Organisation must provide for the submission of the design report to the CAA and the arrangement of the CAA survey of the aircraft and records, prior to flight testing.

- NOTES:**
- 1 The CAA will, on request, provide examples of AANs.
 - 2 Maintenance Schedules, where they differ from published schedules, are subject to the agreement of the CAA Regional Office. The maintenance schedule must be agreed prior to the issue of a Permit to Fly.

2.8 **Flight Test Arrangements**

2.8.1 The Organisation must have a procedure covering the conduct of flight testing of the aircraft as required by the CAA for the initial issue of a Permit to Fly. The design report must be acceptable to the CAA prior to flight testing. The flight test schedule and the test pilot must be confirmed as being acceptable to the CAA Aircraft Certification Department before any flying takes place. A report of the flight testing must be submitted to and accepted by the CAA before the Permit to Fly is issued.

2.8.2 The CAA retains the right to participate in or conduct any required flight test.

2.9 **Exposition**

The headings below are examples of procedures, which may also need to be covered in the Exposition.

- a) Modification procedures;
- b) Concession procedures;
- c) Defect investigation;
- d) Technical Records;
- e) Technical publications control, including Service Bulletin procedures;
- f) Test flight procedures;
- g) Training;
- h) Appendices, giving examples of:
 - i) Standard forms, cross-referenced to the written procedures section;
 - ii) Inspection stamps and other identification symbols used to indicate the status of persons.

3 **Technical Records**

The Organisation must keep copies of supporting evidence and of all reports submitted to the CAA. The records would include, for example: CAA written acceptance of complexity groups (where appropriate), CAA written acceptance of the safety record (for intermediate and complex aircraft), details of the modification status, maintenance records, fatigue audit (including copies of salient records confirming individual assembly fatigue lives), civil modification definitions and justifications, test reports, any Aircrew Manual supplements, weighing record, weight and centre of gravity schedule, radio equipment list and test report and the Organisation Design report.

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Supplement 3 to A8-20

Group M5 Approval – Additional Requirements

1 Personnel

- 1.1 The Organisation must nominate the key engineering staff who support its operation. These staff shall be employed under a formal agreement between the Organisation and the staff member with details of terms of reference as senior members of the Organisation stated in the Exposition.
- 1.2 The Organisation shall have at least one staff member nominated as a senior engineer who is an experienced certifying person holding a CAA licence without Type Rating in the appropriate categories for the aircraft to be maintained. Where this cannot be fully satisfied with respect to being appropriately licensed, in the case of established Organisations, an unlicensed person with appropriate experience recognised by the CAA will be considered.
- 1.3 Additional part time staff may be used to provide extra resources providing there are suitable control procedures in the Exposition. A formal agreement must be in place defining the terms of reference to these staff.
- 1.4 CAA Form AD458, Biographical Details for persons to be nominated in accordance with the A8-20 approval, should be submitted to the appropriate Regional Office.

2 Organisation Personnel Authorisations

- 2.1 Certification Authorisations can be granted by the Approved Organisation, on a controlled basis, for issuing a Permit Flight Release Certificate (Chapter A3-7 paragraph 7). The persons to be authorised must be assessed for technical competence and have appropriate practical experience on the applicable airframe/ engine type.
- 2.2 Certification Authorisations can be granted by the Approved Organisation, on a controlled basis, for issuing a Permit Maintenance Release (Chapter A3-7 paragraph 12). The persons to be authorised must be assessed for technical competence and have appropriate practical experience for the particular maintenance task.
- 2.3 Authorisations can also be granted for certain functions, limited where appropriate to specific servicing or routine line maintenance tasks, that are necessary to support operations either at the main base or away from that base, e.g. taxiing, ground running, pre-flight checks, refuelling etc.
- 2.4 The authorisations must be issued to the person authorised in a style that clearly identifies the individual person and defines the scope of the authorisation and any limitations. Where Organisation codes are used to define the scope of the authorisation and limitations, an explanation of the codes must be readily available.
- 2.5 The procedures for granting authorisation, including method of assessing or establishing personnel competence and experience requirements, must be stated in the Exposition. A list of formal qualifications, e.g. licences or academic requirements, where deemed appropriate should also be listed.
- 2.6 The Organisation must maintain copies of any associated licences, training and experience records that provide evidence in support of the granting of each authorisation.

3 Procedures

3.1 Quality Programme

The Organisation shall have a Quality Control and Assurance programme, via a Quality Audit System, defined in the Exposition.

3.2 Inspection and Certification

3.2.1 The Organisation must ensure that all maintenance and defect rectification is recorded and certified with details of the action taken. The procedure must be in a form acceptable to the CAA and take account of any flight record system required by CAP 632.

NOTE: Normal aviation practice for documenting maintenance checks and recording defects with rectification action will satisfy this requirement.

3.2.2 Maintenance check sheets must provide the amendment status of the maintenance programme when work is certified. A records control system must be established to show the work completed status.

4 Airworthiness Review and Permit Revalidation Recommendation

4.1 The procedures and processes used by the Organisation for carrying out an airworthiness review and making a recommendation for the revalidation of a Permit to Fly must be stated in the Exposition.

5 Maintenance Programmes

5.1 The maintenance programmes and schedules should, where possible, be based upon the original aircraft documentation and must account for the original servicing elements and additional CAA requirements. This must take into account any known service experience such as NDT programmes and supplementary inspections adjusted to address the aircraft utilisation. The engine maintenance programmes and schedules must contain measures to maintain the integrity of the engine critical parts and control systems, taking into account the potential effects of age and any change in utilisation.

5.2 The need to change from flying hours or cycles to calendar periods, where more appropriate, must be considered. Any such change must account for any difference in utilisation between military and civil use and must be agreed with the CAA.

The aircraft and engine maintenance programmes and schedules must contain life limitations; the component and equipment overhaul periods, the fatigue limits and any other significant data.

5.3 Any permitted variations to the scheduled check/inspection periods must be agreed by the CAA and clearly defined in the rules of the maintenance schedule/programme. Such variations must not be applied to any mandatory inspections or used to extend any ultimate life limits/airworthiness life limitations.

5.4 Major structural inspections are not always fully defined in the military service records. This must be taken into account when compiling the maintenance programme. Wherever possible the manufacturer must be consulted. If doubt exists regarding the adequacy of the structural programme, this must be referred to the CAA Aircraft Certification Department.

6 Spares Procurement

- 6.1 Spare parts and components for aircraft of military origin must be obtained from original sources or known and reputable suppliers or manufacturers as determined by the A8-20 Organisation.
- 6.2 Where items are obtained from military, or other related sources, the items must be inspected and evaluated for physical condition, life details, completeness of records, modification status and compatibility with the aircraft serial number. Acceptability of each item should be assessed and recorded by an authorised certifying person prior to fitment. The procedure for this shall be stated in the Exposition.
- 6.3 The assessment of the condition of a component must consider the need to carry out an internal examination to determine the effects of age and corrosion. A partial or full strip investigation is required, if the component's condition cannot be adequately determined by other means.
- 6.4 Structural components, must be inspected for condition, damage and age related deterioration, using NDT techniques when required. Wherever possible the manufacturer's advice must be sought.
- 6.5 For engines, propellers, gearboxes and any other significant components, their history and serviceability must be adequately established by the A8-20 Organisation prior to installation. If the component status cannot be confirmed, it must be dismantled, inspected and if necessary overhauled in order to positively establish the serviceability of the component. With respect to all life-limited parts, where it cannot be established that the records are accurate and complete, such parts must be scrapped. Any component disassembly, inspection and overhaul must be carried out by an Organisation acceptable to the CAA, which may be an A8-20 Organisation with appropriate capability as stated in its Exposition or Schedule of Approval.
- 6.6 Standard aircraft hardware such as fasteners must originate from recognised aviation sources and must conform to the specified part number. Where specifications differ from items in civil use, a formal statement of conformity for equivalence must be provided by an A8-20 Organisation.
- 6.7 Items no longer manufactured or not available from recognised sources must only be accepted if their serviceability and suitability can be determined by inspection or overhaul. The use of alternative parts is only permitted with the agreement of the manufacturer or when supported by a competent design authority.
- 6.8 The A8-20 Organisation must have a procedure in the Exposition for the acceptance and use of alternative parts.

7 Component Manufacture

- 7.1 An A8-20 approval does not replace the requirements of a manufacturing approval.
- 7.2 Where components or parts are to be produced for aircraft undergoing overhaul, repair, or restoration, the manufacture of parts may be permitted subject to the A8-20 Organisation having the necessary expertise, drawings, facilities and equipment.
- 7.3 Where it is intended to utilise the services of an external manufacturing facility and/or design authority, this must be agreed with the CAA.
- 7.4 Major structural parts may only be manufactured by Organisations where appropriate capability can be demonstrated. Any deviation in material specification, heat treatment or other manufacturing process must be supported by a technical justification from a competent design authority.

- 7.5 For turbine engines, the manufacture of critical parts such as compressor discs or drums, turbine discs, rotor shafts and blades will not be permitted. For other components, the scope of manufacture must be submitted to the CAA for approval and declared in the A8-20 Exposition.
- 7.6 For Piston engines, the scope of manufacture of parts must be submitted to the CAA for approval and declared in the A8-20 Exposition.
- 7.7 The A8-20 Exposition must specify how the manufacture of parts or components is controlled and managed by detailing the following:
- a) The Organisation's manufacturing capability;
 - b) The definition of critical, non-critical and major structural components for the aircraft types maintained by the Organisation;
 - c) The quality surveillance of manufacturing processes;
 - d) The procedure to trace materials and processes;
 - e) Drawings and specifications control;
 - f) Component manufacture arrangements and their quality surveillance by the A8-20 Organisation;
 - g) Design authority support arrangements;
 - h) Documented release certification procedures.

8 Modifications

- 8.1 For modifications the procedure in Chapters A2-5 and/or B2-5 applies. Applications for Minor Modifications to aircraft or components must be submitted either to the local CAA Regional Office or through a CAA Approved Design Organisation.
- 8.2 Applications for modifications involving changes to the aircraft, powerplant, propeller type, material specifications or for equipment, may be subject to the Major Modification procedure. All such applications must first be discussed with the CAA Regional Office.

9 Flight Test Arrangements

- 9.1 The Organisation must have a procedure for testing the aircraft. The test schedule and the pilot must have had prior acceptance by the CAA Aircraft Certification Department.
- 9.2 The CAA retains the right to participate in or conduct any required flight test.
- 9.3 If the Organisation or a CAA staff member either as pilot or as an observer carries out a flight test for the issue of a Permit to Fly, when accepted, the CAA Aircraft Certification Department will allocate a Flight Test Report (FTR) number.

10 Maintenance of Components and Parts

- 10.1 The arrangements for the maintenance and overhaul of components and parts as detailed in Chapter A8-20, Supplement No. 1 must be stated in the Organisation's Exposition. Where the Organisation does not have the capability to satisfy this requirement, arrangements with competent Organisations must be stated in the Exposition.

11 Secondary Site Control

- 11.1 Where the Organisation intends to control sites, other than the site of the approval, the additional locations will be identified as secondary sites for approval purposes. These sites must satisfy the requirements of Chapter A8-20 and be identified in the Exposition.
- 11.2 Short term arrangements for temporary secondary sites, which must be formally agreed with the local CAA Regional Office, may be subject to further conditions.
- 11.3 A secondary site is not intended to include activities associated with line support of the aircraft during normal operations.

12 Technical Records

- 12.1 Technical records must be maintained so that proper correlation of all work with relevant documents can be made, including the following as appropriate:
 - a) Customer's Work Order;
 - b) Aircraft, engine or part documentation;
 - c) Relevant standards, specifications and drawings;
 - d) Stores records;
 - e) Test and Inspection records including a record of each component and item of equipment identified by serial number;
 - f) Manufacturing records;
 - g) Outgoing Release Certificate.
- 12.2 Records shall not be destroyed without authorisation from the CAA

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Supplement 4 to A8-20

Requirements to undertake Assessments and to make recommendations for the revalidation of a Permit to Fly

1 Revalidation of a Permit to Fly

- 1.1 A Permit to Fly does not expire (unless revoked) but is only in force when supported by a current Certificate of Validity.
- 1.2 The revalidation of a permit will be predicated upon an airworthiness review report produced by an Approved Organisation (Chapter A8-20) and a recommendation made on a Form AD202P.
- 1.3 The airworthiness review report shall be the result of an inspection of the aircraft and its records by an Approved Organisation (Chapter A8-20) to determine the work to be undertaken to maintain the airworthiness of the aircraft.
- 1.4 The aircraft inspection shall be carried out not more than thirty-one days prior to the date of the renewal recommendation.
- 1.5 The Approved Organisation is responsible for determining the extent of the inspection.
- 1.6 In determining the work to be undertaken, account shall be taken of the following:
 - a) The age, storage conditions, total hours/cycles, type and climatic operating conditions of the complete aircraft and its related spares.
 - b) Compliance with the requirements of a civil, military or a combination of both, maintenance programmes or schedules.
 - c) Work certified in the aircraft records.
 - d) The period between overhauls for the aircraft, engines, propellers and other parts as applicable.
 - e) Airworthiness/Service life limitations.
 - f) CAA requirements or instructions.
 - g) Mandatory Permit Directives.
 - h) Manufacturers Service Bulletins, Service Letters or equivalent documents.
 - i) Requirements in the Pilots Notes or Flight Manual.
 - j) Current Weight and Balance data.
- 1.7 All work supporting the revalidation process must be supervised and carried out at the facilities of the Approved Organisation.

2 Documentation

- 2.1 Following the completion of the airworthiness review, the Approved Organisation must provide the CAA with the following:
 - a) AD200 application for renewal;
 - b) Statutory fee;

- c) Flight Test Report (if applicable, see below);
- d) AD202P recommendation.

NOTE: If the Form AD202P is not received within 10 working days of its date of issue a further AD202P will be required.

- 2.2 The above must be sent to the following address:

Applications and Approvals Department
Civil Aviation Authority
Safety Regulation Group
Aviation House
Gatwick
West Sussex
RH6 0YR

- 2.3 Subject to the documentation being accepted a Certificate of Validity will be issued, normally valid for a twelve-month period.
- 2.4 The revalidation process for an aircraft with a current Certificate of Validity may be anticipated by a maximum of thirty-one days from the date of expiry without loss of validity. The Certificate of Validity will then be re-issued for a twelve-month period from the expiry date of the previous certificate.
- 2.5 If the anticipation period is more than thirty-one days, the Certificate of Validity will be re-issued for twelve months and thirty-one days from the date of recommendation and will supersede the previous certificate.
- 2.6 If the Certificate of Validity has expired, revalidation will be for a twelve-month period from the date the recommendation is accepted by the CAA.

3 Records and Reports

- 3.1 A copy of Form AD202P shall be included in the aircraft records. The Approved Organisation shall retain a copy of all Form AD202P recommendations and airworthiness review reports, which shall be made available to the CAA on request.

4 Flight Tests

- 4.1 A flight test to BCAR Chapters A/B 3-3 is required for the first issue of a Permit to Fly. Subsequent flight tests for revalidation shall be at three yearly intervals and may be carried out prior to and within 62 days of the date of expiry of the Certificate of Validity.
- 4.2 If the Certificate of Validity has expired and a flight test is required prior to making a recommendation for revalidation, the Approved Organisation must formally request permission for flight testing from the CAA.

Chapter A8-21 Approval of Organisations Responsible for Design or Production – Group DOA and POA

1 Scope *(Part 21A.131 and .231)*

This requirement applies only to aircraft and associated parts, that are *not* required to comply with European Regulation (EC) No. 216/2008, i.e. Non-EASA Aircraft. It establishes the procedure for the approval of Non-EASA Aircraft production and/or design organisations and rules governing the rights and obligations of applicants for, and holders of, such approvals. Any organisation involved with the design or production of EASA Aircraft and/or associated parts, should refer to the appropriate European regulations, see Note 1 below.

NOTE 1: The European Aviation Safety Agency (EASA) as established in European Regulation (EC) No. 216/2008 commenced operation on 28 September 2003 and at the same time European Commission Regulation (EC) No. 1702/2003, laying down implementing rules for the airworthiness and certification of aircraft, entered into force. For ease of reference, aircraft that are required to comply with Regulation (EC) No. 216/2008 are commonly described as “EASA Aircraft”.

NOTE 2: BCAR A8-21 was derived from Part 21 and references the corresponding Part 21 paragraph after each subtitle. Part 21 is an annex to European Commission Regulation (EC) No. 1702/2003.

NOTE 3: Lists of EASA and Non-EASA aircraft can be found in the CAA publication, CAP 747, ‘Mandatory Requirements for Airworthiness’.

2 Eligibility *(Part 21A.133 and .233)*

2.1 Any natural or legal person (‘organisation’) shall be eligible as an applicant for an approval under this Requirement.

2.2 For design organisation approval the applicant shall hold or have applied for:

- a) a type certificate or equivalent, or approval of a major change to a type design; or
- b) a supplemental type certificate or equivalent; or
- c) a major repair design approval; or
- d) privileges to approve design changes or repairs; or
- e) privileges to submit reports to the CAA.

2.3 For production organisation approval the applicant shall:

- a) justify that, for a defined scope of work, an approval under this Requirement is appropriate for the purpose of showing conformity with a specific design (see Chapter A8-21 Appendix 1); and
- b) hold or have applied for an approval of that specific design; or
- c) have ensured, through an appropriate arrangement with the applicant for, or holder of, an approval of that specific design, satisfactory coordination between production and design.

3 Application *(Part 21A.134 and .234)*

Each application for a design or production organisation approval shall be made in a form and manner established by the CAA and shall include an outline of the terms of approval and associated privileges requested.

4 Issue of approval *(Part 21A.135 and .235)*

An organisation shall be entitled to have a design or production organisation approval issued by the CAA when it has demonstrated compliance with the applicable requirements under this Requirement.

5 Design assurance system *(Part 21A.239)*

5.1 The design organisation shall demonstrate that it has established and is able to maintain a design assurance system for the control and supervision of the design, and of design changes, of products, parts and appliances covered by the application. This design assurance system shall be such as to enable the organisation:

- a) to ensure that the design of the products, parts and appliances or the design change thereof, comply with the applicable type certification basis and environmental protection requirements; and
- b) to ensure that its responsibilities are properly discharged in accordance with:
 - i) the appropriate provisions of this Requirement; and
 - ii) the terms of approval issued under this Requirement.
- c) to independently monitor the compliance with, and adequacy of, the documented procedures of the system. This monitoring shall include a feed-back system to a person or a group of persons having the responsibility to ensure corrective actions.

5.2 The design assurance system shall include an independent checking function of the showings of compliance.

5.3 The design organisation shall specify the manner in which the design assurance system accounts for the acceptability of the parts or appliances designed or the tasks performed by partners or subcontractor according to methods which are the subject of written procedures.

6 Production Quality System *(Part 21A.139)*

6.1 The production organisation shall demonstrate that it has established and is able to maintain a documented quality system. This quality system shall be such as to enable the organisation to ensure that each product, part or appliance produced by the organisation or by its partners, or supplied from or subcontracted to outside parties, conforms to the applicable design data and is in condition for safe operation, and thus exercise the privileges granted under this Requirement.

6.2 The quality system shall contain:

- a) as applicable within the scope of approval, control procedures for:
 - i) document issue, approval, or change;
 - ii) vendor and subcontractor assessment audit and control;

- iii) verification that incoming products, parts, materials, and equipment, including items supplied new or used by buyers of products, are as specified in the applicable design data;
- iv) identification and traceability;
- v) manufacturing processes;
- vi) inspection and testing, including production flight tests;
- vii) calibration of tools, jigs, and test equipment;
- viii) non conforming item control;
- ix) airworthiness co-ordination with the applicant for, or holder of, the design approval;
- x) records completion and retention;
- xi) personnel competence and qualification;
- xii) issue of airworthiness release documents;
- xiii) handling, storage and packing;
- xiv) internal quality audits and resulting corrective actions;
- xv) work within the terms of approval performed at any location other than the approved facilities;
- xvi) work carried out after completion of production but prior to delivery, to maintain the aircraft in a condition for safe operation.

The control procedures need to include specific provisions for any critical parts.

- b) an independent quality assurance function to monitor compliance with, and adequacy of, the documented procedures of the quality system. This monitoring shall include a feedback system to the person or group of persons referred to in sub-paragraph 8.1 c) ii) and ultimately to the manager referred to in sub-paragraph 8.1 c) i) to ensure, as necessary, corrective action.

7 Exposition (*Part 21A.143 and .243*)

- 7.1 The organisation shall submit to the CAA an exposition (see Chapter A8-21 Appendix 3) providing the following information:
 - a) A statement signed by the accountable manager confirming that the exposition and any associated manuals which define the approved organisation's compliance with this Requirement will be complied with at all times;
 - b) The title(s) and names of nominated managers accepted by the CAA;
 - c) The duties and responsibilities of the manager(s) including matters on which they may deal directly with the CAA on behalf of the organisation;
 - d) An organisational chart showing associated chains of responsibility of the managers;
 - e) A list of certifying staff;
 - f) A general description of man-power resources;
 - g) A general description of the facilities located at each address specified in the organisation's certificate of approval;

- h) A general description of the scope of work relevant to the terms of approval;
- i) The procedure for the notification of organisational changes to the CAA;
- j) The amendment procedure for the exposition;
- k) A description of the quality system and/or design assurance system and associated procedures;
- l) A list of partners and significant subcontractors.

7.2 The exposition shall be amended as necessary to remain an up-to-date description of the organisation, and copies of any amendments shall be supplied to the CAA.

8 Approval requirements *(Part 21A.145 and .245)*

8.1 The organisation shall demonstrate, on the basis of the information submitted in the exposition that:

- a) with regard to general approval requirements, facilities, working conditions, equipment and tools, processes and associated materials, number and competence of staff, general organisation and coordination are adequate to discharge the organisations obligations under this Requirement;
- b) with regard to all necessary airworthiness, noise, fuel venting and exhaust emissions data:
 - i) the production organisation is in receipt of such data from the CAA, and from the holder of, or applicant for, the type approval or design approval, to determine conformity with the applicable design data;
 - ii) the production organisation has established a procedure to ensure that airworthiness, noise, fuel venting and exhaust emissions data are correctly incorporated in its production data;
 - iii) such data are kept up to date and made available to all personnel who need access to such data to perform their duties.
- c) with regard to management and staff:
 - i) a manager has been nominated by the organisation, and is accountable to the CAA. His or her responsibility within the organisation shall consist of ensuring that all design and production is performed to the required standards and that the organisation is continuously in compliance with the data and procedures identified in the exposition;
 - ii) a person or group of persons have been nominated to ensure that the organisation is in compliance with these Requirements, and are identified, together with the extent of their authority. Such person(s) shall act under the direct authority of the accountable manager referred to in subparagraph i). The persons nominated shall be able to show the appropriate knowledge, background and experience to discharge their responsibilities;
 - iii) staff at all levels have been given appropriate authority to be able to discharge their allocated responsibilities and that there is full and effective coordination within the organisation in respect of airworthiness, noise, fuel venting and exhaust emission data matters.
- d) with regard to certifying staff, authorised by the organisation to sign the documents issued under the privileges of this approval:

- i) the knowledge, background (including other functions in the organisation), and experience of the certifying staff are appropriate to discharge their allocated responsibilities;
- ii) the organisation maintains a record of all certifying staff which shall include details of the scope of their authorisation;
- iii) certifying staff are provided with evidence of the scope of their authorisation.

9 Changes to the approved organisation *(Part 21A.147, .148 and .247)*

- 9.1 After the issue of the organisation approval, each change to the organisation, particularly changes to the design assurance or quality system, that is significant to the showing of compliance, conformity or to the airworthiness and environmental protection of the product, part or appliance, shall be approved by the CAA.
- 9.2 An application for approval shall be submitted to the CAA and before implementation of the change the organisation shall demonstrate that it will continue to comply with these Requirements after implementation.
- 9.3 A change of the location of the facilities of the approved organisation is deemed a change of significance and therefore necessitates application to the CAA.

10 Transferability *(Part 21A.149 and .249)*

An organisation approval in accordance with these Requirements is not transferable. A change of ownership is considered a significant change and necessitates application to the CAA.

11 Terms of approval *(Part 21A.151 and .251)*

- 11.1 The terms of approval shall identify the scope of work, the categories of products, parts and appliances, for which the holder is entitled to exercise the privileges of this approval.
- 11.2 Those terms shall be issued as part of an organisation approval.

12 Changes to the terms of approval *(Part 21A.153 and .253)*

Each change to the terms of approval shall be approved by the CAA. An application for a change to the terms of approval shall be made in a form and manner established by the CAA. The organisation shall comply with the applicable requirements of A8-21.

13 Investigations *(Part 21A.157 and .257)*

- 13.1 The organisation shall make arrangements that allow the CAA to make any investigations, including investigations of partners and subcontractors, necessary to determine compliance and continued compliance with the applicable requirements of this Chapter.
- 13.2 The design organisation shall allow the CAA to review any report and make any inspection and perform or witness any flight and ground test necessary to check the validity of the compliance statements submitted.

14 Findings (*Part 21A.158 and .258*)

- 14.1 When objective evidence is found showing non-compliance of the holder of an organisation approval with the applicable requirements, the finding shall be classified as follows:
- a) A level one finding is any non-compliance with these Requirements which could lead to uncontrolled non-compliances with applicable requirements and which could affect the safety of the aircraft.
 - b) A level two finding is any non-compliance with these Requirements which is not classified as level one.
- 14.2 After receipt of notification of findings:
- a) In case of a level one finding, the holder of the organisation approval shall demonstrate corrective action to the satisfaction of the CAA within a period of no more than 21 working days after written confirmation of the finding;
 - b) In case of level two findings, the corrective action period granted by the CAA shall be appropriate to the nature of the finding but in any case initially shall not be more than six months. In certain circumstances and subject to the nature of the finding the CAA may extend the six month period subject to a satisfactory corrective action plan;
 - c) A level three finding shall not require immediate action by the holder of the organisation approval.
- 14.3 In case of level one or level two findings, the organisation approval may be subject to a partial or full suspension or revocation. The holder of the organisation approval shall provide confirmation of receipt of the notice of suspension or revocation of the organisation approval in a timely manner.

15 Duration and continued validity (*Part 21A.159 and .259*)

- 15.1 An organisation approval shall be issued for an unlimited duration. It shall remain valid unless:
- a) the organisation fails to demonstrate compliance with the applicable requirements;
 - or
 - b) the CAA is prevented by the approved organisation, or any of its partners or subcontractors, from performing its investigations; or
 - c) there is evidence that the organisation cannot maintain satisfactory control of the design or manufacture of products, parts or appliances under the approval; or
 - d) the organisation no longer meets the eligibility requirements for this approval; or
 - e) the certificate has been surrendered or revoked.
- 15.2 Upon surrender or revocation, the certificate shall be returned to the CAA.

16 Design Privileges (*Part 21A.263*)

- 16.1 The holder of a design organisation approval shall be entitled to perform design activities within its scope of approval.
- 16.2 Compliance documents submitted by the holder of a design organisation approval for the purpose of obtaining:

- a) a type certificate, type approval or approval of a major change; or
 - b) a supplemental type certificate; or
 - c) an APU equipment approval authorisation; or
 - d) a major repair design approval;
- may be accepted by the CAA without further verification.

16.3 The holder of a design organisation approval shall be entitled, within its terms of approval and under the relevant procedures of the design assurance system:

- a) to classify changes to type design and repairs as 'major' or 'minor' (see Chapter A8-21 Appendix 2);
- b) to approve minor changes to type design and minor repairs;
- c) to issue information or instructions containing the following statement: 'The technical content of this document is approved under the authority of the UK CAA design organisation approval reference: [x/y/z].';
- d) to submit reports to the CAA.

17 **Production Privileges** (*Part 21A.163*)

Pursuant to the terms of approval issued under these requirements the holder of a production organisation approval may:

- a) perform production activities under these requirements;
- b) in the case of complete aircraft and upon presentation of a UK CAA Aircraft Statement of Conformity, obtain an aircraft certificate of airworthiness or permit to fly and, if appropriate, a noise certificate without further showing (see Chapter A8-21 Supplement 2);
- c) in the case of other products, parts or appliances issue UK CAA Approved Certificates without further showing (see Chapter A8-21 Supplement 1);
- d) maintain a new aircraft that it has produced and issue a Certificate of Release to Service in respect of that maintenance (see Chapter A8-21 Supplement 3).

18 **Obligations of the holder** (*Part 21A.165 and .265*)

The holder of an organisation approval shall, as applicable:

- a) ensure that the exposition and the documents to which it refers, are used as basic working documents within the organisation;
- b) maintain the organisation in conformity with the data and procedures approved for the organisation approval;
- c) determine that the design of products, or changes or repairs thereof, as applicable, comply with applicable requirements and have no unsafe feature;
- d) except for minor changes or repairs approved under the privileges of the design organisation approval, provide to the CAA statements and associated documentation confirming compliance with paragraph c);
- e) ensure that required manuals or instructions for continued airworthiness, or changes thereof, are reviewed and approved either by the organisation or the CAA as appropriate and are provided to each known owner of aircraft affected;

- f) provide to the CAA information or instructions related to Airworthiness Directives and Mandatory Permit Directives;
- g)
 - i) determine that each completed aircraft conforms to the type design and is in condition for safe operation prior to submitting a UK CAA Aircraft Statement of Conformity; or
 - ii) determine that other products, parts or appliances are complete and conform to the approved design data and are in condition for safe operation before issuing a UK CAA Approved Certificate to certify airworthiness, and additionally in case of engines, determine according to data provided by the engine type approval holder that each completed engine is in compliance with the applicable emissions requirements, current at the date of manufacture of the engine, to certify emissions compliance; or
 - iii) determine that other products, parts or appliances conform to the applicable data before issuing UK CAA Approved Certificate as a conformity certificate;
- h) record all details of work carried out;
- i) establish and maintain an internal occurrence reporting system in the interest of safety, to enable the collection and assessment of occurrence reports in order to identify adverse trends or to address deficiencies, and to extract reportable occurrences. This system shall include evaluation of relevant information relating to occurrences and the promulgation of related information;
- j)
 - i) report to the holder of the type approval or design approval, all cases where products, parts or appliances have been released by the production organisation and subsequently identified to have possible deviations from the applicable design data, and investigate with the holder of the type approval or design approval in order to identify those deviations which could lead to an unsafe condition;
 - ii) report to the CAA the deviations which could lead to an unsafe condition identified according to subparagraph i). Such reports shall be made in a form and manner established by the CAA;
 - iii) where the holder of the production organisation approval is acting as a supplier to another production organisation, report also to that other organisation all cases where it has released products, parts or appliances to that organisation and subsequently identified them to have possible deviations from the applicable design data;
- k) provide assistance to the holder of the type approval or design approval in dealing with any continuing airworthiness actions that are related to the products parts or appliances that have been produced;
- l) establish an archiving system incorporating requirements imposed on its partners, suppliers and subcontractors ensuring conservation of the data used to justify conformity of the products, parts or appliances. Such data shall be held at the disposal of the CAA and be retained in order to provide the information necessary to ensure the continuing airworthiness of the products, parts or appliances;
- m) where, under its terms of approval, the holder issues a Certificate of Release to Service, determine that each completed aircraft has been subjected to necessary maintenance and is in condition for safe operation, prior to issuing the certificate.

Supplement 1 to A8-21

1 United Kingdom Civil Aviation Authority		UK CAA APPROVED CERTIFICATE				3 Form Tracking No.	
4 Approved Organisation Name and Address						5 Work Order / Contract / Invoice	
6 Item	7 Description	8 Part No.	9 Eligibility*		10 Qty	11 Serial No./ Batch No.	12 Status/ Work
13 Remarks							
This certificate has been issued under national rule provisions.							
14 Certified that, unless otherwise specified in block 13, the items identified above were manufactured in conformity to: <input type="checkbox"/> approved design data and are in a condition for safe operation <input type="checkbox"/> non-approved design data specified in block 13				19 Certified that unless otherwise specified in block 13 the work identified in block 12 and described in block 13 was accomplished in accordance with the airworthiness requirements of the UK and in respect to that work the items are considered ready for release to service			
15 Authorised Signature		16 Approval No.		20 Authorised Signature		21 Approval No.	
17 Name		18 Date (dd/mmm/yyyy)		22 Name		23 Date (dd/mmm/yyyy)	

* Installer must cross-check eligibility with applicable technical data

USER/INSTALLER RESPONSIBILITIES

NOTE:

1. It is important to understand that the existence of the document alone does not automatically constitute authority to install the part/component/assembly.
2. Where the user/installer works in accordance with the national regulations of another airworthiness authority it is essential that the user/installer ensure that his/her airworthiness authority accepts parts/components/assemblies from the UK CAA.
3. Statement 14 and 19 do not constitute installation certification. In all cases the aircraft maintenance record shall contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.

APPROVED CERTIFICATE

Completion instructions

These instructions relate only to the use of the UK CAA Approved Certificate for manufacturing purposes.

1 PURPOSE AND SCOPE

The primary purpose of the certificate is to release products, parts and appliances (hereafter referred to as 'item(s)') as identified in Blocks 7 through 11 as applicable after manufacture, or to release maintenance work carried out on items under the approval of the CAA.

The Certificate serves as an official certificate for the delivery of items from the manufacturer to users. The Certificate is not, however, a delivery or shipping note.

It may only be issued by organisations certificated by the CAA, within the scope of such an approval. Aircraft are not to be released using the Certificate. Products, Parts or Appliances for aircraft that are the responsibility of the European Aviation Safety Agency (EASA) are NOT to be released using the Certificate.

A mixture of 'New' and 'Used' items is not permitted on the same Certificate.

A mixture of items certified in conformity with 'approved data' and to 'non-approved data' is not permitted on the same Certificate, and consequently only one box in Block 14 can be ticked.

2 GENERAL

The Certificate must comply with the format attached including block numbers and the location of each Block. The size of each Block may however be varied to suit the individual application, but not to the extent that would make the Certificate unrecognisable. The overall size of the Certificate may be significantly increased or decreased so long as the Certificate remains recognisable and legible. The Certificate must be in 'Portrait' rather than 'Landscape' to help differentiate it from the EASA Form 1. If in doubt consult the CAA.

Please note that the user responsibility statements can be placed on either the reverse or front of this Certificate.

All printing must be clear and legible to permit easy reading and be in English.

The Certificate may either be pre-printed or computer generated but in either case the printing of lines and characters must be clear and legible. Pre-printed wording is permitted in accordance with the attached model but no other certification statements are permitted.

The details to be entered on the Certificate may be either machine/computer printed or hand-written using block letters, permit easy reading and be in English. Abbreviations must be restricted to a minimum.

The space remaining on the reverse side of the Certificate may be used by the originator for any additional information but must not include any certification statement.

The original Certificate must accompany the items and correlation must be established between the Certificate and the item(s). A copy of the Certificate must

be retained by the organisation that manufactured the item. Where the Certificate format and the data is entirely computer generated, subject to acceptance by the CAA, it is permissible to retain the Certificate format and data on a secure database.

There is no restriction in the number of copies of the Certificate sent to the customer or retained by the originator.

The Certificate that accompanies the item may be attached to the item by being placed in an envelope for durability.

3 COMPLETION OF THE APPROVED CERTIFICATE BY THE ORIGINATOR

Except as otherwise stated, there must be an entry in all Blocks to make the document a valid certificate.

Block 1 Pre-printed 'United Kingdom Civil Aviation Authority'.

Block 2 Pre-printed 'UK CAA Approved Certificate'.

Block 3 A unique number must be pre-printed in this Block for Certificate control and traceability purposes except that in the case of a computer generated document, the unique number need not be pre-printed where the computer is programmed to produce the number.

Block 4 The information in this Block needs to satisfy two objectives:

1. to relate the Certificate to an organisation approval, for the purposes of verifying authenticity and authority of the Certificate;
2. to provide a ready means of rapidly identifying the place of manufacture and release, to facilitate traceability and communication in the event of problems or queries.

Therefore, the name entered in the box is that of the organisation approval holder who is responsible for making the final determination of conformity or airworthiness, and whose Approval Reference Number is quoted in Block 16. The name must be entered in exactly the same form as appears in the Approval Certificate held by the organisation.

The address(es) entered in Block 4 will assist in the identification of the approval holder and in identifying the place of release.

If the place of manufacture and release is one of the organisation addresses listed on the Approval Certificate, then that is the only address needed in this Block.

If the place of manufacture and release is a location which is NOT listed in the Approval Certificate then two addresses are required. The first address will be the address of the approval holder (as listed in the Approval Certificate) and a second address entered to identify the place of manufacture and release.

This Block may be pre-printed. Logo of the production approval holder, etc., is permitted if it can be contained within the Block.

Block 5 The purpose is to reference work order/contract/invoice or any other internal organisational process such that a fast traceability system can be established. The use of the Block for such traceability is mandatory in the absence of item Serial Numbers or batch numbers in Block 11. When not used, state N/A.

Block 6 The Block is provided for the convenience of the organisation issuing the Certificate to permit easy cross-reference to the 'Remarks' Block 13 by the use of line item numbers. Block 6 must be completed where there is more than one line item.

Where a number of items are to be released on the Certificate, it is permissible to use a separate listing cross-referring Certificate and list to each other.

Block 7 The name or description of the item must be given. Preference must be given to use of the Illustrated Parts Catalogue (IPC) designation.

Block 8 State the Part Number. Preference must be given to use of the IPC number designation.

Block 9 Used to indicate the type approved applications for which the released items are eligible for installation, based on information provided by the design approval holder. The following entries are permitted:

- a) At least one specific or series aircraft, propeller, or engine model as identified by the design approval holder. In case of engine or propeller release, state the aircraft approved applications, or, if application is not specific, state 'type certificated engine/propeller'.
- b) 'None', to be used only when it is known that the items do not yet have a type approved application, for example: pending type certificate, for test only, pending approved data. If this category is used, then appropriate explanatory information must be provided in Block 13 and new items may only be released for Conformity purposes.
- c) 'Various' if known to be eligible for installation on multiple products, according to a procedure approved by the CAA.

In the case of multiple applications it is acceptable for this Block to contain cross reference to an attached document which lists such applications.

Any information in Block 9 does not constitute authority to fit the item to a particular aircraft, engine or propeller. The User/Installer must confirm via documents such as the Parts Catalogue, Service Bulletins, etc., that the item is eligible for the particular installation.

Any information in Block 9 does not necessarily mean that the product, parts or appliances are only eligible for installation on the listed model(s). Nor does it guarantee that the product, parts or appliances are eligible for installation on all entries in Block 9. Eligibility may be affected by modification or configuration changes.

Where a part is identified by the design holder in accordance with officially recognised Standards, then the part is considered a Standard Part and release with an Approved Certificate is not necessary. However where a production approval holder releases a standard part with an Approved Certificate then it must be able to demonstrate that it is in control of the manufacture of that part.

Block 10 State the quantity of items being released.

Block 11 State the items Serial Number or Batch Number if applicable. If neither is applicable, state 'N/A'.

Block 12 Enter one or a combination of appropriate standard words from the following table. The table lists, in quotes, the standard words permitted

for use when releasing new items prior to entry into service, i.e. the items have not been previously used in operational service. It also details the circumstances and conditions under which they may be used. In all cases the certification rules relating to Block 14 apply, the appropriate box is to be marked, and Block 15 is to be signed.

TABLE OF STANDARD WORDS FOR NEW PARTS

1	<p>'MANUFACTURED'</p> <p>a) The production of a new item in conformity with the applicable design data, or</p> <p>b) Re-certification by the original manufacturer after rectification work on an item, previously released under paragraph 1 a), which has been found to be unserviceable prior to entry into service, e.g., defective, in need of inspection or test, or shelf life expired. Details of the original release and the rectification work are to be entered in Block 13, or re-certification of new items from conformity purpose to airworthiness purpose at the time of approval of the applicable design data, provided that the items conform to the approved design data. An explanation of the basis of release and details of the original release are to be entered in Block 13.</p>
2	<p>'INSPECTED/TESTED'</p> <p>The examination of a previously released new item:</p> <p>a) to establish conformity with the applicable design data, or</p> <p>b) in accordance with a customer-specified standard or specification, details of which are to be entered in Block 13, or</p> <p>c) to establish serviceability and condition for safe operation prior to re-release as a spare, where the item has been obtained with an EASA Form 1 or Approved Certificate. An explanation of the basis of release and details of the original release are to be entered in Block 13.</p>
3	<p>'MODIFIED'</p> <p>The alteration, by the original manufacturer, of a previously released item prior to entry into service. Details of the alteration and the original release are to be entered in Block 13</p>

The above statements must be supported by reference to the approved data/manual/specification. Such information shall be identified in either Block 12 or 13.

Block 13 It is necessary to state any information in this Block, either directly or by reference to supporting documentation, that identifies particular data or limitations relating to the item being released that are necessary for the User/Installer to make the final airworthiness determination of the item. The information must be clear, complete, and provided in a form and manner which is adequate for the purpose of making such a determination.

Each statement must be clearly identified as to which item it relates.

If there is no statement, state 'None'.

Examples of conditions which would necessitate statements in Block 13 are:

- when the certificate is used for conformity purposes the following statement must be entered at the beginning of Block 13:

'ONLY FOR CONFORMITY, NOT ELIGIBLE FOR INSTALLATION ON IN-SERVICE TYPE CERTIFICATED AIRCRAFT / ENGINE / PROPELLER';

- when the design data is not approved by the CAA, then the competent authority of the third country responsible for the approval of the design data must be identified and the following statement must be entered together with a reference identifying the approval:

'Design data approved by <identify the responsible competent authority of a third country and the approval reference>';

- re-certification of new items from conformity purpose to airworthiness purpose at the time of approval of the applicable design data, provided that the items conform to the approved design data.

Provided that no change in design has occurred during the design data approval process, the manufacturer may state that the design data has been approved and that provided the specific component is still in the condition it was when it was shipped to the user/installer, the component is now eligible to be installed. The manufacturer must make this statement on a second Approved Certificate where in addition to any other necessary remarks, appropriate explanatory information must be provided. The following wording must be used: 'RE-CERTIFICATION OF NEW PARTS FROM CONFORMITY TO AIRWORTHINESS: THIS DOCUMENT ONLY CERTIFIES THE APPROVAL OF THE DESIGN DATA TO WHICH THIS ITEM WAS (THESE ITEMS WERE) MANUFACTURED, BUT DOES NOT COVER CONFORMITY/CONDITION AFTER RELEASE OF THE INITIAL APPROVED CERTIFICATE REF.....'.

Approved Certificate (both for 'Conformity purposes' and for 'Airworthiness purposes') must be generated by the same organisation, i.e. the original manufacturer or prime manufacturer, whichever raised the original Approved Certificate for Conformity purposes.

- For complete engines and propellers the applicable type certificate, or equivalent, must be referenced.
- For complete engines, a statement of compliance with the applicable emissions requirements current at the date of manufacture of the engine.
- Usage restriction for repaired items.
- Modification standard.
- Alternative approved items supplied.
- Concessions applicable.
- Non-compliance with certification specifications.
- Details of repair work carried out or reference to a document where this is stated.

- Compliance with, or non-compliance with airworthiness directives or Service Bulletins.
- Information on life limited items.
- Condition of items or reference to a document detailing this information.
- Manufacturing date or cure date.
- Shelf life data.
- Shortages.
- Time Since New (TSN), Time Since Overhaul (TSO), etc.
- Re-certification of previously released 'new' items.

Block 14 This Block may only be used to indicate the status of new items.

The main purpose of the Certificate is to release items for airworthiness purposes, which means conformity with approved design data and in condition for safe operation.

This airworthiness certification is valid in the UK.

The certificate may also be used as a Conformity Certificate when items conform to applicable design data which are not approved for a reason which is stated in Block 13 (e.g, pending type certificate, for test only, pending approved data).

In this case the following additional statement must be entered at the beginning of Block 13 itself and not in a separate document. 'ONLY FOR CONFORMITY, NOT ELIGIBLE FOR INSTALLATION ON IN-SERVICE TYPE CERTIFICATED AIRCRAFT/ENGINE/PROPELLER'.

Mixtures of items released for Airworthiness and for Conformity purposes are not permitted in the same certificate. Also refer to the notes for completion of Block 9.

Block 15 The hand-written normal signature of a person who has written authority from an approved production organisation to make Certifications in respect of new items. Use of a stamp instead of a signature is not permitted, but the authorised person may add a stamp impression to his or her signature to aid recognition. Subject to the agreement of the CAA in any particular case, computer-generated signatures are permitted if it can be demonstrated that an equivalent level of control, traceability and accountability exists.

Block 16 State the full authorisation reference given by the CAA to the organisation releasing the new items.

Block 17 The name of the person signing Block 15, printed, typed, or written in a legible form.

Block 18 The date on which Block 15 is signed, in the format day/month/year. The month must be stated in letters (sufficient letters must be used so there can be no ambiguity as to the month intended).

Block 19 Not used and strike out for release of new items.

Block 20 Not used and strike out for release of new items.

Block 21 Not used and strike out for release of new items.

Block 22 Not used and strike out for release of new items.

Block 23 Not used and strike out for release of new items.

Supplement 2 to A8-21

UK CAA AIRCRAFT STATEMENT OF CONFORMITY		
1. State of manufacture United Kingdom	2. National Aviation Authority Civil Aviation Authority	3. Statement Reference Number
4. Organisation		
5. Aircraft Type	6. Type Approval Reference	
7. Aircraft Registration	8. Manufacturers Identification Number	
9. Engine/Propeller Details		
10. Modifications and/or Service Bulletins		
11. Airworthiness Directives		
12. Concessions		
13. Exemptions, Waivers or Derogations		
14. Remarks This statement of conformity has been issued under national rule provisions		
15. Certificate of Airworthiness/Permit to Fly		
16. Additional Requirements		
17. Statement of Conformity It is hereby certified that this aircraft conforms to the type approved design and to the items identified above in boxes 9, 10, 11, 12 and 13. The aircraft is in a condition for safe operation. The aircraft has been satisfactorily tested in flight.		
18. Signed	19. Name	20. Date (dd/mmm/yyyy)
21. UK Production Organisation Approval Reference		

UK CAA AIRCRAFT STATEMENT OF CONFORMITY

COMPLETION INSTRUCTIONS

1. PURPOSE AND SCOPE

The UK CAA Statement of Conformity is to be used for the release of a new aircraft by a manufacturer under UK national rules. This document is not to be used for the release of EASA aircraft.

2. GENERAL

The Statement of Conformity must comply with the format attached including block numbers and the location of each Block. The size of each Block may however be varied to suit the individual application, but not to the extent that would make the Statement of Conformity unrecognisable. If in doubt consult the CAA.

The Statement of Conformity must either be pre-printed or computer generated but in either case the printing of lines and characters must be clear and legible. Pre-printed wording is permitted in accordance with the attached model but no other certification statements are permitted.

Completion in English may be either machine/computer printed or hand-written using block letters to permit easy reading.

A copy of the Statement of Conformity and all referenced attachments are to be retained by the approved production organisation.

3. COMPLETION OF THE STATEMENT OF CONFORMITY BY THE ORIGINATOR

There should be an entry in all Blocks to make the document a valid statement.

A Statement of Conformity may not be issued unless the design of the aircraft and its installed products are approved by the CAA.

The information required in Blocks 9, 10, 11, 12, 13 and 14 may be by reference to separate identified documents held on file by the production organisation, unless the CAA agrees otherwise.

This Statement of Conformity is not intended to include those items of equipment that may be required to be fitted in order to satisfy applicable operational rules. However, some of these individual items may be included in Block 10 or in the approved type design. Operators are therefore reminded of their responsibility to ensure compliance with the applicable operational rules for their own particular operation.

Block 1 Pre-printed 'United Kingdom'.

Block 2 Pre-printed 'Civil Aviation Authority'.

Block 3 A unique serial number should be pre-printed in this Block for Statement control and traceability purposes. Except that in the case of a computer generated document the number need not be pre-printed where the computer is programmed to produce and print a unique number.

Block 4 The full name and location address of the organisation issuing the statement. This Block may be pre-printed. Logos etc. are permitted if the logo can be contained within the Block.

Block 5 The aircraft type in full as defined in the type approval and its associated data sheet.

Block 6 The type approval (e.g. type certificate or type acceptance) reference numbers and issue for the subject aircraft.

- Block 7 If the aircraft is registered then this mark will be the registration mark. If the aircraft is not registered then this will be such a mark that is accepted by the CAA and, if applicable, by the competent authority of a third country.
- Block 8 The identification number assigned by the manufacturer for control and traceability and product support. This is sometimes referred to as a Manufacturers Serial No. or Constructors No.
- Block 9 The engine and propeller type(s) in full as defined in the relevant type approval and its associated data sheet. Their manufacturer identification No. and associated location should also be shown.
- Block 10 Approved design changes to the aircraft type design.
- Block 11 A listing of all applicable airworthiness directives (or equivalent) and a declaration of compliance, together with a description of the method of compliance on the subject individual aircraft including products and installed parts, appliances and equipment. Any future compliance requirement time should be shown.
- Block 12 Approved unintentional deviation to the approved type design sometimes referred to as concessions, divergences, or non-conformances.
- Block 13 Only agreed exemptions, waivers or derogations may be included here.
- Block 14 Remarks. Any statement, information, particular data or limitation which may affect the airworthiness of the aircraft. If there is no such information or data, state: 'NONE'.
- Block 15 Enter 'Certificate of Airworthiness' or 'Restricted Certificate of Airworthiness', or 'Permit to Fly' as appropriate.
- Block 16 Additional requirements such as those notified by an importing country should be noted in this Block.
- Block 17 Validity of the Statement of Conformity is dependent on full completion of all Blocks on the form. A copy of the flight test report together with any recorded defects and rectification details should be kept on file by the production approval holder. The flight test report should be signed as satisfactory by the appropriate certifying staff and a flight crew member, e.g., test pilot or flight test engineer. The flight tests performed are those defined under the control of the production approval holder to ensure that the aircraft conforms with the applicable design data and is in condition for safe operation.
- The listing of items provided (or made available) to satisfy the safe operation aspects of this statement should be kept on file by the production approval holder.
- Block 18 The Statement of Conformity may be signed by the person authorised to do so by the production approval holder. A rubber stamp signature should not be used.
- Block 19 The name of the person signing the certificate should be typed or printed in a legible form.
- Block 20 The date on which the Statement of Conformity is signed, in the format day/month/year. The month must be stated in letters (sufficient letters must be used so there can be no ambiguity as to the month intended).
- Block 21 The CAA approval reference of the production approval holder should be quoted.

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Supplement 3 to A8-21

CERTIFICATE OF RELEASE TO SERVICE

(APPROVED ORGANISATION NAME)

Organisation Approval Reference:

Certificate of Release to Service in accordance with the Air Navigation Order, for the time being in force.

Aircraft: Type:

Constructor No/ Registration

has been maintained as specified in Work Order

Brief description of work performed:

Certifies that the work specified was carried out in accordance with BCAR A8-21, 17 d) and in respect to that work, the aircraft is considered ready for release to service and therefore is in a condition for safe operation

Certifying Staff (name):

Signature:

Location:

Date:

Certificate of Release to Service

Completion Notes

“Brief description of work performed” should include reference to the approved data used to perform the work.

The “Location” to be entered on the Certificate is that where the maintenance work has been performed and not the location of the approved organisation.

Appendix 1 to A8-21 Eligibility Guidance for Production Organisation Approval

- 1 To be eligible for an A8-21 approval with production privileges, the applicant must produce, or intend to produce, aeronautical products, parts or appliances intended for airborne use.
- 2 The applicant will be required to show a need for an approval, normally based on one or more of the following criteria:
 - a) Production of aircraft, engines or propellers (except if the CAA considers it inappropriate);
 - b) The need to issue an Approved Certificate, for example, direct delivery of new parts to owners' or operators' maintenance organisations;
 - c) Participation in an international co-operation program where the CAA considers working under an approval necessary;
 - d) Criticality and technology involved in the part, appliance, or material being manufactured. Approval in this case may be found by the CAA as the best tool to exercise its duty in relation to airworthiness control;
 - e) Where an approval is otherwise determined by the CAA as being required.
- 3 It is not the intent of the CAA to issue approvals to manufacturing organisations that perform only sub-contract work for main manufacturers of products and are consequently placed under their direct surveillance.
- 4 Where standard parts, materials, processes or services are included in the applicable design data their standards should be controlled by the POA holder in a manner which is satisfactory for the final use of the item on the product, part or appliance. Accordingly, the manufacturer or provider of the following will not at present be considered for production organisation approval:
 - consumable materials;
 - standard parts;
 - parts identified in the product support documentation as 'industry supply' or 'no hazard';
 - non-destructive testing or inspection;
 - processes (heat treatment, surface finishing, shot peening, etc.).
- 5 **Standard Parts**

In the context of the British Civil Airworthiness Requirements 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; and
 - all marking requirements and the design, manufacturing and inspection data necessary to demonstrate conformity of that part are in the public domain and published or established as part of officially recognised Standards. In this context "officially recognised Standards" means 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.

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Appendix 2 to A8-21 **Classification of Changes to Type Design**

1 Scope

This appendix establishes the procedures and criteria for the classification of changes to type design made under A8-21 approvals.

2 Introduction

2.1 The type design is defined as:

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

2.2 BCAR Section A/B Chapter 2-5 defines a change to type design as any change to an aircraft including its components, engines, propellers, radio apparatus, accessories, instruments, equipment, and their installations together with the Aircraft Flight Manual or other approved documents.

2.3 All changes to UK registered non-EASA aircraft must be approved by the CAA. The classification of changes as major or minor determines the approval route to be followed for such approval and hence the extent of CAA involvement.

2.4 The privilege to classify changes as major or minor will be granted to an organisation when the CAA is satisfied that the organisation has demonstrated compliance with applicable requirements of BCAR A8-21.

3 Classification Criteria

3.1 The criteria for classification of changes contained in paragraph 4.1 are similar to those of Part 21A.91 and are based on the effect on airworthiness where airworthiness is defined as a product being in conformity with type design and in condition for safe operation

3.2 Whenever there is doubt with respect to the classification the CAA should be consulted for clarification.

3.3 An aircraft is considered airworthy if it complies with all applicable airworthiness and environmental protection requirements. A change to the Type Design will be judged to have an "appreciable effect on airworthiness" and therefore will be classified Major, in particular but not only, when one or more of the following criteria are met:

- 3.3.1 Where the change requires an amendment to the type certification basis (such as special condition, equivalent safety finding, elect to comply, exemption, reversion, later requirements).
- 3.3.2 Where there is a new interpretation of the requirements used for the type certification basis that has not been published as advisory material or otherwise agreed with the CAA.
- 3.3.3 Where the demonstration of compliance employs 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.
- 3.3.4 Where the extent of new substantiation data necessary to comply with the applicable airworthiness and environmental protection requirements, and the degree to which the original substantiation data has to be re-assessed and re-evaluated is considerable.
- 3.3.5 The change may alter the technical contents of manuals directly approved by the CAA, or the Type Certificate / Approval Data Sheet, or limitations shown on the Certificate of Airworthiness or Permit to Fly. Affected documents may include: the Aircraft Flight Manual, the Operating Limitations, the Airworthiness Limitations in the Maintenance Manual, and the MMEL.
- 3.3.6 Where the change introduces or affects functions where the failure effect is classified catastrophic or hazardous.
- 3.3.7 The change is made mandatory by an airworthiness directive/mandatory permit directive or the change is the terminating action of such a directive.
- 3.3.8 Where strict application of the criteria detailed in 3.3 results in a major classification, the applicant may request re-classification. The CAA may agree to re-classification to minor status on the basis of the following or similar discretionary factors:
 - The skills and experience accumulated by the applicant with similar changes, together with an assessment of the extent and the complexity of the compliance demonstration to be developed for the change currently under consideration.
 - A simple design change planned to be mandated by an Airworthiness Directive / Mandatory Permit Directive may be re-classified minor dependent on the involvement of the CAA.

Reason for the re-classification decision should be recorded.

4 Classification Process

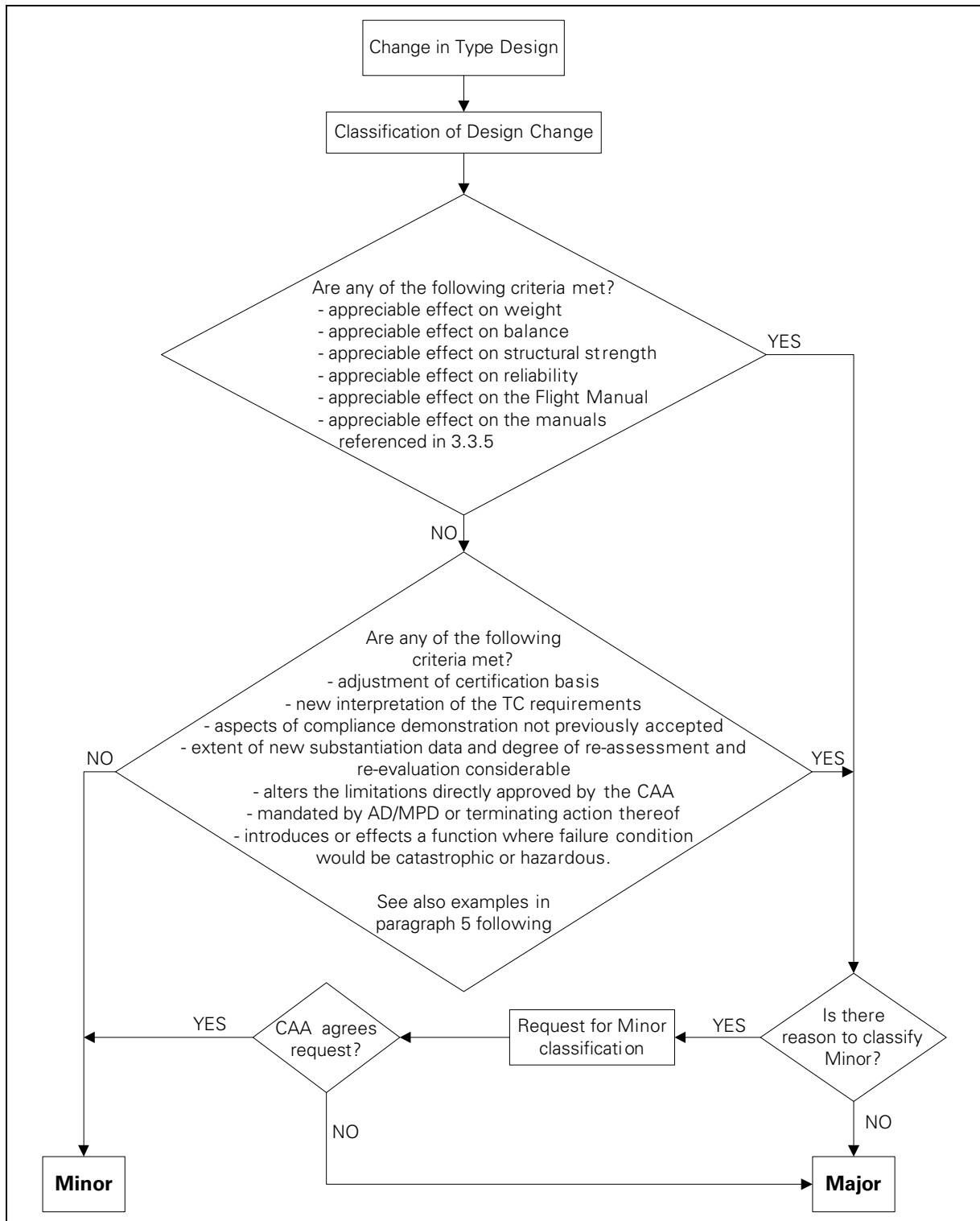


Figure 1

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

4.1 When recommending a classification consideration should be given to interaction between disciplines and the consequences this may have on the effects of the change. For example in the case of an avionics installation the interaction between systems and structure should be considered.

5 Guidance

The major change examples listed below provide some guidance and are not intended to present a comprehensive list of all major changes.

5.1 Structure

Changes to materials used for the manufacture of primary structural elements where fatigue, damage tolerance, creep and fracture toughness are significant in the design substantiation and other changes that affect the fatigue and damage tolerance substantiation.

5.2 Cabin Safety

Changes to cabin layouts that would require a re-assessment of emergency evacuation or have an effect on weight and balance.

5.3 Flight

Changes that would affect the performance or handling.

5.4 Systems

For systems assessed under paragraph xx.1309 or equivalent safety assessment, where the failure effect is "catastrophic" or "hazardous". Where the failure effect is "major" the change should be classified as major if:

- the compliance demonstration uses means that have not been previously accepted;
- the change affects the pilot/system interface;
- the change introduces new types of functions/systems such as GPS primary, TCAS, HUD etc.

5.5 Propellers

A change of propeller type, diameter, aerofoil or blade retention system etc.

5.6 Engines

A change of engine type, operating speeds, temperatures or other limitations.

Changes that affect or introduce engine critical parts.

5.7 Environment

Changes that introduce an increase in noise or emissions.

5.8 Powerplant

Control system changes that affect engine/propeller/airframe interface or change of engine/propeller type.

NOTE: Further examples are listed in Appendix A to GM 21A.91.

Appendix 3 to A8-21 Example A8-21 Organisation Exposition

The enclosed wording and layout are an example of the information and contents of a typical exposition covering both design and production. This must be viewed in light of the actual circumstances of the applicant organisation and completed accordingly. Whether the organisation is applying for a production approval only, design approval only or a combined design and production approval obviously affects which sections need to be included.

Part 1 Management; this section should be fully completed.

Part 2 Procedures; the organisation's procedures can be included in this section, or a summary should be provided of the relevant procedures together with a cross reference to the actual procedures or work instructions.

Part 3 Appendices; The sample of documents should, as a minimum, have an actual facsimile of the organisation's release documentation, i.e. CAA Approved Certificate, and a copy of the Approval Certificates provided by the CAA when granting the approval. A list of parts or products may be included as a capability list but this is optional, unless specifically requested by the CAA.

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ANYBODY'S A8-21 EXPOSITION

Organisation address

Telephone number

Fax number

Email address

Approval Number...(once notified by CAA)

Document Reference:

Issue Number:

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INTRODUCTION

This document, the Organisation Exposition, satisfies the requirements of the UK Civil Aviation Authority (CAA), British Civil Airworthiness Requirements (BCAR), A8-21 paragraph 7.

Notes: (Not for inclusion in the exposition)

- 1. Include a brief company history and description of A8-21 related activity.*
- 2. If the organisation is part of a larger group of companies explain the relationship here.*

Distribution List

HOLDER	COPY NUMBER
Quality Department	1
UK Civil Aviation Authority (CAA)	2 and 3
An Other	4

Anybody's A8-21 Exposition

Amendment Control Page

All Holders are responsible for ensuring that amendments to their publication are carried out immediately and in accordance with instructions contained in amendment transmittal letters.

Date and sign this sheet to reflect amendment insertion as appropriate and return amendment confirmation slip to the Quality Department.

AMDT No.	AMDT DATE	INCORPORATED BY / DATE	AMDT No.	AMDT DATE	INCORPORATED BY / DATE
Initial	06/11/03	CD / 07-11-03	15		
2	07/01/04	AB / 12-01-04	16		
3			17		
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1 MANAGEMENT

1.1 Corporate Commitment of Accountable Manager

Reference A8-21 paragraph 7.1 a) and 8.1 c) i)

This Exposition defines the organisation and procedures upon which the UK Civil Aviation Authority, British Civil Airworthiness Requirements, A8-21 approval is based.

These procedures are approved by the undersigned and must be complied with, as applicable, when work/orders are being progressed under the terms of the A8-21 approval.

It is accepted that these procedures do not override the necessity of complying with any new or amended regulation published by the UK Civil Aviation Authority from time to time, where these new or amended regulations are in conflict with these procedures.

It is understood that the UK Civil Aviation Authority will approve this organisation whilst the UK Civil Aviation Authority is satisfied that the procedures are being followed and work standards maintained. It is further understood that the UK Civil Aviation Authority reserves the right to suspend or cancel the A8-21 approval of the organisation if the UK Civil Aviation Authority has evidence that procedures are not being followed, standards not upheld or the organisation is no longer in compliance with BCAR A8-21.

Signed

Accountable Manager and..... *(quote position, e.g. Chief Executive)*

For and on behalf of*(quote organisation's name)*

1.2 Management Personnel

Reference A8-21 paragraph 8.1 c) ii) and 7.1 b)

NAME..... TITLE

AB..... Accountable Manager

XY..... Quality Manager

Etc...

A CAA biographical details form will be submitted to the CAA for the above management positions, excluding the Accountable Manager.

Any changes to the personnel named above will be notified to the CAA.

NOTES: *(not for inclusion in the Exposition)*

- 1 *This list comprises the Senior Personnel for which the CAA would require a form to be completed. However the Accountable Manager does not require a form unless they also perform the function of another nominated post, for example 'Production Manager'.*
- 2 *Other posts may be added if desired but it should be clearly shown whether or not they are considered as "nominated management" for form submission purposes. This, in effect, is the "group of persons" referred to in A8-21 paragraph 8.1 c) ii) whose responsibilities include ensuring that the A8-21 approved organisation is in compliance with A8-21 requirements. These persons are ultimately directly responsible to the Accountable Manager for this function.*
- 3 *The actual job titles of the nominated managers may be used rather than 'Quality Manager' etc. but they should correspond to the titles used in section 1.3, 'Duties and Responsibilities of Management Personnel'. It should also be clearly indicated who is the Accountable Manager.*
- 4 *It is recommended that this list is included in the Exposition on a separate page so that it can be easily amended when changes occur.*

1.3 **Duties and Responsibilities of Management Personnel**

Reference A8-21 paragraph 8.1 c) ii) and 7.1 b)

NOTES: (not for inclusion in the Exposition)

The examples on the following pages are the usual core responsibilities of the managers nominated. Many other tasks need to be considered, as listed below, but which manager is responsible for each of these is dependent on the organisation. This list is not exhaustive and is intended as a guide only.

Examples of nominated managers' responsibilities:

- Ensuring that the certifying staff approval/authorisation system is satisfactorily maintained at all times;*
- Ensuring that all staff are provided with sufficient technical training;*
- Ensuring the provision and monitoring of initial and continuation training for all staff that carry out and/or certify airworthiness related tasks;*
- Ensuring that legible and durable records are kept for all work undertaken, for the designated period;*
- Ensuring that any tools and equipment used are calibrated to national standards and appropriately maintained;*
- Ensuring that all technical data required for reference by staff is controlled and available;*
- Ensuring that the movement and storage of all parts comply with good practice and customer requirements;*
- Ensuring a contract review is undertaken for all orders to establish whether the work is within the scope of the A8-21 approval and whether the design-production arrangements are adequate;*
- Providing a process to ensure correct analysis of Airworthiness Directives, other safety information and manufacturers' service bulletins;*
- Providing technical support to production areas and customers and assisting customers in investigation of component incidents.*

The organisation should decide who will be responsible for liaising with the CAA and show this in his/her terms of reference. If more than one person is nominated it must be clearly shown what each person is responsible for with, as a general rule, no overlapping of responsibility.

The CAA requires the nominated managers to be identified and their credentials submitted to the CAA (see section 1.9) in order that they may be seen to be appropriate in terms of relevant knowledge and satisfactory experience related to the nature of the production activities as performed by the A8-21 organisation.

1.3.1 **Accountable Manager**

The Accountable Manager is responsible for:

- ensuring that work carried out by the approved organisation meets the standards required by the CAA;
- ensuring that the necessary finance, manpower resources and facilities are available to the company;
- ensuring that any charges are paid, as prescribed by CAA in respect of the BCAR A8-21 approval;
- establishing and promoting the quality system specified in BCAR A8-21 paragraph 6;
- ensuring the competence of all personnel including management personnel has been assessed.

Notes: (not for inclusion in the Exposition)

Accountable manager means the manager who is responsible, and has corporate authority for ensuring that all work is carried out to the required standard. This function may be carried out by the Chief Executive or by another person in the organisation, nominated by the Chief Executive to fulfil the function provided his or her position and authority in the organisation permits to discharge the associated responsibilities.

The manager is responsible for ensuring that all necessary resources are available and properly used in order to carry out work under the approval in accordance with A8-21.

The manager needs to have sufficient knowledge and authority to enable him or her to respond to the CAA regarding major issues of the approval and implement necessary improvements.

The manager needs to be able to demonstrate that he or she is fully aware of and supports the quality policy and maintains adequate links with the quality manager, or equivalent.

Any additional duties and responsibilities within the organisation may be added provided they do not conflict with those above, which constitute the Accountable Manager's core responsibilities under A8-21.

1.3.2 **Quality Manager**

The Quality Manager is responsible, under the direct authority of the Accountable Manager for:

- establishing the quality system in compliance with A8-21 requirements;
- controlling suppliers and subcontractors in accordance with a documented system;
- establishing an independent quality audit system to monitor compliance with A8-21 requirements;
- implementing a quality audit programme in which compliance with the requirements is reviewed at regular intervals. Any observed non-compliances or poor standards are brought to the attention of the person concerned via his/her manager.

The Quality Manager has direct access to the Accountable Manager the event of any reported discrepancy not being adequately attended to by the relevant person, or in respect of any disagreement over the nature of a discrepancy.

1.3.3 **Head of Design**

The Head of Design is responsible, under the direct authority of the Accountable Manager, for:

- establishing a documented design assurance system
- ensuring that all design work is undertaken in accordance with the design assurance system, A8-21 and other relevant regulations.
- ensuring that for all design work compliance is demonstrated and verified with the appropriate type certification basis or equivalent.
- signing a Declaration of Compliance after satisfactory verification of compliance with the applicable airworthiness requirements
- confirming that all design procedures as specified in the exposition have been followed by signing a Declaration of Compliance for each type certification, design change or repair design

Notes: (not for inclusion in the Exposition)

The Head of the design organisation has the direct or functional responsibility for all departments of the organisation which are responsible for the design of the product.

1.3.4 **Production Manager**

The Production Manager is responsible, under the direct authority of the Accountable Manager, for ensuring that products are manufactured within the scope of the A8-21 approval, are in conformity with the applicable data and are in a condition for safe operation. The Production Manager should notify the Accountable Manager if unable to achieve any responsibilities.

The Production Manager is responsible for ensuring that the organisation has:

- facilities appropriate to the planned production;
- office accommodation appropriate to the management of the planned work;
- a working environment appropriate to the tasks being undertaken;
- sufficient competent personnel to plan, perform, supervise, inspect and certify the work being performed;
- appropriate tools, equipment and materials to perform the planned tasks;
- storage facilities for parts, tools, equipment and materials;
- all necessary data as required by A8-21.

1.3.5 **Head of Airworthiness**

Reports to the Head of Design but is responsible under the authority of the Accountable Manager for:

- Liaison between the design organisation and the CAA with respect to all aspects of Type Investigation and certification.
- Ensuring that an exposition is prepared and updated with regard to the design organisation as required in A8-21 paragraph 7.
- Co-operation with the CAA in developing procedures to be used for the type certification process.
- Design procedure compilation, including documenting compliance.
- Co-operation in issuing guidelines for the preparation of the manuals e.g. component maintenance manual.
- Ensuring procurement and distribution of applicable Certification Specifications and environmental protection requirements and other specifications.
- Co-operating with the CAA in proposing the type certification basis
- Interpretation of Airworthiness and environmental protection requirements and requesting decisions of the CAA in case of doubt.
- Advising all departments of the design organisation in all questions regarding airworthiness, environmental protection approvals and certification.
- Preparation of the Type Investigation programme and co-ordination of all tasks related to Type Investigation in concurrence with the CAA.
- Regular reporting to the CAA about Type Investigation progress and announcement of scheduled tests in due time.
- Ensuring co-operation in preparing test programmes needed for demonstration of compliance.
- Establishing the compliance checklist and updating for changes.
- Checking that all compliance documents are prepared as necessary to show compliance with all Airworthiness and environmental protection requirements, as well as for completeness, and signing for release of the documents.
- Checking the required type design definition documents and ensuring that they are provided to the CAA for approval when required.
- Preparation, if necessary, of a draft for a type certificate data sheet and/or type certificate data sheet modification.
- Providing verification to the head of the design organisation that all activities required for Type Investigation have been properly completed.
- Approving the classification of changes and granting the approval for minor changes.
- Monitoring of significant events on other aeronautical products as far as relevant to determine their effect on airworthiness of products being designed by the design organisation.
- Ensuring co-operation in preparing Service Bulletins and the Structural Repair Manual, and subsequent revisions, with special attention being given to the manner in which the contents affect airworthiness and environmental protection and granting the approval on behalf of the CAA.

- Ensuring the initiation of activities as a response to failure (accident/incident/in-service experience) evaluation and complaints from the operation and providing of information to the CAA in case of airworthiness impairment (continuing airworthiness).
- Advising the CAA with regard to the issue of Airworthiness Directives and Mandatory Permit Directives in general based on Service Bulletins.
- Ensuring that the manuals approved by the CAA, including any subsequent revisions (the Aircraft Flight Manual, MMEL, the Airworthiness Limitations section of the Instructions for Continued Airworthiness and the Certification Maintenance Requirements (CMR) document, where applicable) are checked to determine that they meet the respective requirements, and that they are provided to the CAA for approval.

Notes: (not for inclusion in the Exposition)

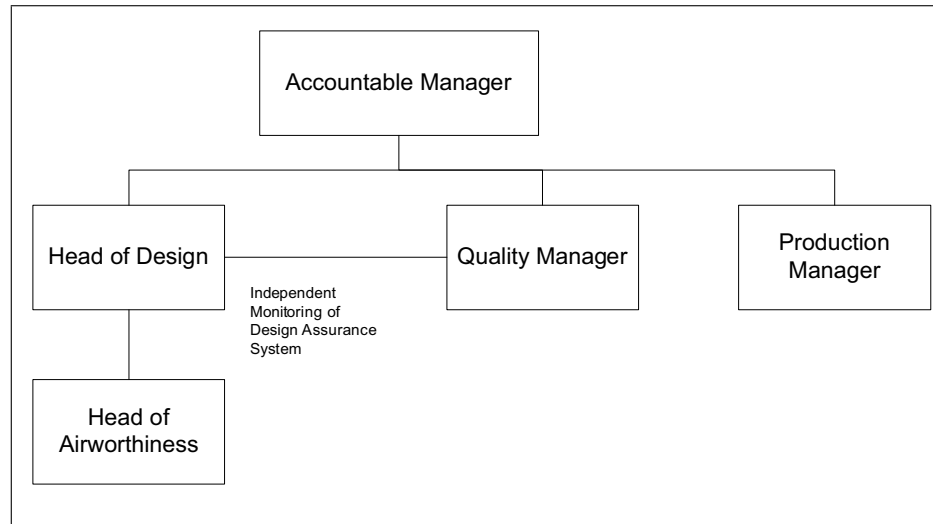
A Head of Airworthiness, or equivalent function, has been established to act as the focal point for co-ordinating airworthiness and environmental protection matters they report directly to the Head of the design organisation. This function may be integrated into an independent quality assurance organisation reporting to the Head of the design organisation.

It is understood that, particularly in smaller organisations, there may not be a single person or department responsible for all of the activities listed above.

For all organisations undertaking design work, a Head of Airworthiness needs to be nominated, and the personnel with responsibility for each of the activities listed clearly identified.

1.4 Management Organisation Chart

Reference A8-21 paragraph 8.1 a) and 7.1 d)



Notes: (not for inclusion in the Exposition)

The chart above is only an example and each organisation should represent their own structure in this section.

Organisations undertaking design work should note that the audit function (usually under the Quality Manager) must have a report to the Head of Design for design assurance system audits, with direct access to the Accountable Manager for all other functions.




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1.5 List of Certifying Staff

Reference A8-21 paragraph 8.1 d) and 7.1 e)

The list of certifying staff is as stated below. In addition, hard copy records of all production staff and staff with airworthiness related duties and responsibilities are retained within the Quality Department.

Approved Certificate Signatories

Staff No	Name	Signature	CRS Number	Stamp
722123	Mark Swan		1328	
737866	Elvis Ellis		2286	
750116	Bryan Cartier		3363	

Compliance Verification Engineers

Staff No	Name	Signature	CVE Number	Stamp
723200	Ray Parker		24	
711386	Brian Whyte		16	

Notes: (not for inclusion in the Exposition)

The example above shows several different reference methods, not all of these are necessary but as a minimum the member of certifying staff should be identified by name; signature and authorisation number. Stamps are not mandatory but can help identification.

The staff listed here are the only ones allowed to sign an Approved Certificate; Aircraft Statement of Conformity; Certificate of Release to Service etc, as indicated. No delegation of signatory status is possible so it is important to ensure sufficient personnel are authorised to cover for leave and sickness.

The following is the minimum information to be recorded in respect of each certifying person:

Name

- a) Date of Birth*
- b) Basic Training and standard attained*
- c) Specific Training and standard attained*

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- d) If appropriate – Continuation Training*
- e) Experience*
- f) Scope of the authorisation*
- g) Date of first issue of the authorisation*
- h) If appropriate – expiry date of the authorisation*
- i) Identification Number of the authorisation*

The record may be kept in any format and must be controlled by an internal procedure, which forms part of the quality system.

Persons authorised to access the system should be restricted to a minimum to ensure that records cannot be altered in an unauthorised manner and that confidential records are not accessed by unauthorised persons.

The certifying person must be given reasonable access, on request, to his or her own records.

The CAA has a right of access to the data held in such a system.

The organisation must keep the record for at least two years after the certifying person has ceased employment with the organisation or withdrawal of the authorisation; whichever is the sooner.

1.6 **Manpower Resources**

Reference A8-21 paragraph 7.1 f)

Notes: (not for inclusion in the Exposition)

- *State here the approximate staff numbers by discipline, e.g. production, quality, design etc. Also detail any arrangements for temporary contracting of staff.*
- *The resources described must justify the grant of approval and in sufficient detail to explain the support at each site and for each function.*
- *Numbers of personnel should be given in general terms so that a clear picture is given without the need for amendment as a result of routine staff fluctuations, but able to highlight any significant re-deployment or loss of staff.*
- *Where the approval is sub-divided into sites or different major functions the resources should be related to each site and function.*

1.7 Facilities

Reference A8-21 paragraph 7.1 g)

Notes: (not for inclusion in the Exposition)

This section should describe each of the facilities, in some detail, at which the organisation intends to carry out work under the A8-21 approval, thereby building up a picture of what the CAA is being asked to approve. A plan of the facility should be included together with approximate floor area. If more than one site is to be approved the details of each individual site should be clear.

Anybody's A8-21 Exposition

1.8 Scope of Work

Reference A8-21 paragraph 7.1 h) and 11

SCOPE OF WORK		PRODUCT/CATEGORIES
Design	Parts	Electrical Systems & Equipment Cabin Interiors
Production	Products	Aircraft XYZ
	Parts	Components associated with the above aircraft type. Electrical Cables and Looms Cabin Interior equipment Metallic structure
Limitations		Non-pressurised aircraft only

A8-21 Privileges:

Design Privileges

- To perform design activities within its scope of approval.
- Compliance documents submitted for the purpose of obtaining a type certificate or approval of a major change to a type design; or a supplemental type certificate; or an APU equipment approval authorisation; or a major repair design approval; may be accepted by the CAA without further verification; or
- Classify changes to type design and repairs as 'major' or 'minor'.
- Approve minor changes to type design and minor repairs.
- Issue information or instructions containing the following statement: 'The technical content of this document is approved under the authority of the UK CAA design organisation approval reference: [x/y/z].'
- To submit reports to the UK CAA.

Production Privileges

- Perform production activities.
- In the case of complete aircraft and upon presentation of a UK CAA Aircraft Statement of Conformity obtain an aircraft certificate of airworthiness or permit to fly and, if appropriate, a noise certificate without further showing.
- In the case of other products, parts or appliances issue UK CAA Approved Certificates without further showing.
- Maintain a new aircraft that it has produced and issue a Certificate of Release to Service in respect of that maintenance.

Notes: (not for inclusion in the Exposition)

The above example closely reflects the wording of an Approval Certificate which would normally be reproduced as an appendix to the exposition. All possible privileges are listed, some of which may not be relevant to your organisation. The description of the scope of work in this section can be more specific and detailed than the Approval Certificate itself, but should remain within the scope defined in that certificate.

A Capability List may be included as an appendix to the exposition with a full listing of part numbers produced by the organisation. In some circumstances the CAA may insist on a capability list as a way of controlling the scope of approval of an organisation.

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1.9 **Notification Procedure to CAA of Changes to the Organisation**

Reference A8-21 paragraphs 7.1 i), 7.2 and 9

In accordance with the requirements of A8-21 paragraphs 7.2 and 9, the organisation will seek written approval from the CAA before any proposed change to:

- The Accountable Manager according to A8-21 paragraph 8.1 c) i) prior to appointment. The CAA will be notified of any anticipated changes to allow for interview of the proposed Accountable Manager if required.
- The organisational structure or any of the managers nominated in section 1.2 of this exposition. The CAA will be notified of any anticipated changes and the proposed candidate(s) will complete a biographical details form, which will be submitted to the CAA for acceptance.
- Any changes to the facility, equipment or tooling that could affect the organisation approval will be notified to the CAA in writing with a copy of the revised exposition.
- Proposed changes to the design assurance system or quality system will be notified to the CAA in writing with a copy of the revised exposition and may be considered a significant change by the CAA.
- Any significant change shall be applied for using the appropriate CAA application form and will incur a fee. A significant change is a change of site, organisation name or change that requires the amendment of the Terms of Approval. The CAA will be consulted if in doubt of the significance of a change to the organisation.

The organisation understands and accepts that the CAA may, at its discretion, prescribe conditions during the period that a change is being introduced.

1.10 **Amendment Procedure for the Exposition**

Reference A8-21 paragraph 7.2

The exposition shall be maintained as an up-to-date description of the organisation and in compliance with A8-21. It shall not be amended without the written acceptance of the proposed amendment by the CAA. Procedures referenced from the exposition may be amended without the prior acceptance of the CAA but may be reviewed during subsequent audit and may need further amendment if found to be non-compliant with A8-21.

1.10.1 **Persons Responsible for Amending Exposition**

The Quality Manager is responsible for the monitoring and amendment of the exposition, including associated procedures manuals, and the submission of proposed amendments to the CAA.

1.10.2 **Procedure for Amending Documents Referenced in the Exposition**

Notes: (not for inclusion in the Exposition)

The source of proposed amendments within the organisation and how they are incorporated internally prior to submission to the CAA should be described in 1.10.

Section 1.10.2 above should describe the procedure for generating and incorporating amendments to internal procedures in a controlled manner, including "ownership" of the procedure and authority to approve amendments. These amendments do not need to be submitted to the CAA unless the exposition also needs revision as a result of the change, in which case the exposition amendment must be submitted.

2 PROCEDURES

Note: The specific procedure references used by the organisation to address each of the listed activities will need to be identified in the text.

2.1 Design Assurance System

The design assurance system is the organisational structure, responsibilities, procedures and resources to ensure the proper functioning of the design organisation.

The design assurance means all those planned and systematic actions necessary to provide adequate confidence that the organisation has the capability:

- to design products or parts in accordance with the applicable requirements;
- to show and verify the compliance with these requirements; and
- to demonstrate to the CAA this compliance.

The "Type Investigation" means the tasks of the organisation in support of the type certificate, supplemental type certificate or other design approval processes necessary to show and verify and to maintain compliance with the applicable requirements.

Effective Design Assurance demands a continuing evaluation of factors that affect the adequacy of the design for intended applications, in particular that the product, or part, complies with applicable requirements and will continue to comply after any change. To achieve this documentation is generated and maintained in accordance with procedure ref. 'xxx' covering:

- The type design, including relevant design information, drawings and test reports, including inspection records of test specimens.
- The means of compliance.
- The compliance documentation (compliance check list, reports...).

In the case of an application for a supplemental type certificate, or equivalent, where the organisation has entered into an arrangement with the type approval holder because we do not have sufficient capability ourselves; we will obtain the agreement of the type approval holder for the proposed supplemental type certificate. The agreement will document that the type approval holder has no technical objection; and has agreed to collaborate with the supplemental type certificate holder to ensure discharge of all obligations for continued airworthiness of the changed product.

The compliance document is the end result of the certification process, where the showing of compliance is recorded. For each specific certification process, the CAA should be involved in the process itself at an early stage, especially through the establishment of the certification programme. The inspections or tests under A8-21 paragraph 13) may be performed at various stages of the whole certification process, not necessarily when the compliance document is presented. Therefore, according to the scheduled level of involvement, the CAA should agree which documents are to be accepted without further CAA verification under the DOA privilege of A8-21 paragraph 16.2.

It will be ensured that full and complete liaison between the design organisation and production organisations manufacturing to the type certificate is maintained, including the items described in the design arrangement, appendix 3.1.3.

Once in service, items are monitored in accordance with procedure ref. 'xxx' to ensure continued airworthiness.

Maintenance and operating instructions (including Services Bulletins) needed for continuing airworthiness will be prepared and maintained. These documents are provided to all affected operators and all involved authorities.

2.1.1 **Compliance Verification**

Compliance Verification is the independent check that compliance with the requirements as defined in the Type Investigation programme (Certification Specifications such as CS-23 or BCAR Section T etc.) has been demonstrated.

This independent check will consist of the verification by a person not creating the compliance data (Compliance Verification Engineer - CVE). Such person may work in conjunction with the individuals who prepare compliance data.

All compliance documents, including test programmes and data, necessary for the verification of compliance with the applicable requirements, will be approved by signature to indicate completion of this verification activity.

Compliance Verification Engineers (CVE) will be nominated for each technical discipline to undertake this verification and approval activity. See paragraphs 1.5. and 2.2.5. Only nominated CVE may approve a document as above.

2.1.2 **Design Change Classification (Major or Minor)**

Changes to 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. All other changes are 'major changes'.

Notes: (not for inclusion in the Exposition)

The procedure must address the following points:

- *the identification of changes to type design or repairs;*
- *classification;*
- *justification of the classification;*
- *authorised signatories;*
- *supervision of changes to type design or repairs initiated by subcontractors.*

For changes to type design, criteria used for classification must be in compliance with A8-21 Appendix 2.

For repairs, criteria used for classification must be in compliance with A8-21 Appendix 2.

Identification of changes to type design or repairs

The procedure must indicate how the following are identified:

- *major changes to type design or major repairs;*
- *those minor changes to type design or minor repairs where additional work is necessary to show compliance with the CS and environmental protection requirements;*
- *other minor changes to type design or minor repairs requiring no further showing of compliance.*

Classification

The procedure must show how the effects on airworthiness and environmental protection are analysed, from the very beginning, by reference to the applicable requirements.

If no specific airworthiness or environmental protection requirements are applicable to the change or repairs, the above review must be carried out at the level of the part or system where the change or repair is integrated and where specific airworthiness or environmental protection requirements are applicable.

Justification of the classification

All decisions of classification of changes to type design or repairs as "major" or "minor" must be recorded and, for those which are not straightforward, also documented. These records must be easily accessible to the CAA for sample check.

Authorised signatories

All classifications of changes to type design or repairs must be accepted by an appropriate authorised signatory. The procedure must indicate the authorised signatories for the various products listed in the terms of approval.

For those changes or repairs that are handled by subcontractors it must be described how the DOA holder manages its classification responsibility.

Supervision of changes to type design or repairs initiated by subcontractors.

The procedure must indicate, directly or by cross-reference to written procedures, how changes to type design or repairs may be initiated and classified by subcontractors and are controlled and supervised by the DOA holder.

2.1.3 Approval of Design Changes

Notes: (not for inclusion in the Exposition)

The procedure must address the following points:

- *compliance documentation;*
- *approval under the DOA privilege;*
- *authorised signatories;*
- *supervision of minor changes to type design or minor repairs handled by subcontractors.*

Compliance documentation

For those minor changes to type design or minor repairs where additional work to show compliance with the applicable airworthiness or environmental protection requirements is necessary, compliance documentation must be established and independently checked as required by 5.2. The procedure must describe how the compliance documentation is produced and checked.

Approval under the DOA privilege

The procedure must define a document to formalise the approval under the DOA privilege.

This document must include at least:

- *identification and brief description of the change or repair and reasons for change or repair;*
- *applicable airworthiness or environmental protection requirements and methods of compliance;*
- *reference to the compliance documents;*
- *effects, if any, on limitations and on the approved documentation;*

- *evidence of the independent checking function of the showing of compliance;*
- *evidence of the approval under the privilege of 16.3(b) by an authorised signatory;*
- *date of the approval.*

Design changes and repairs should be identified by means of a unique number allocated by the design organisation. This number should include the organisation's approval reference to permit ready identification of the source of the design data.

For further information on repairs, see below.

Authorised signatories

The persons authorised to sign for the approval under the privilege of 16.3 b) must be identified (name, signature and scope of authority) in the exposition.

Supervision of minor changes to type design or minor repairs handled by subcontractors

For minor changes/repairs handled by subcontractors the procedure must indicate, directly or by cross-reference to written procedures, how these minor changes/repairs are approved at the subcontractor level and the arrangements made for supervision by the DOA holder.

2.1.4 Repair Design

2.1.4.1 Repair design and record keeping

Relevant substantiation data associated with a new major repair design will include:

- damage identification and reporting source;
- major repair design approval sheet identifying applicable requirements and references of justifications;
- repair drawing and/or instructions and scheme identifier;
- correspondence with the TC, STC or design approval holder, if its advice on the design has been sought;
- structural justification (static strength, fatigue, damage tolerance, flutter etc.) or references to this data;
- effect on the aircraft, engines and/or systems, (performance, flight handling, etc. as appropriate);
- effect on maintenance programme;
- effect on Airworthiness limitations, the Flight Manual and the Operating Manual;
- weight and moment change;
- special test requirements.

Relevant minor repair documentation includes paragraphs a) and c). Other points above may be included where necessary. If the repair is outside the approved data, justification for classification is required.

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.).

Special consideration should also be given to Life Limited parts and Critical Parts, notably with the involvement of the type certificate or STC holder.

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

2.1.4.2 Classification of repairs

a) Clarification of the terms Major/Minor

In line with the definitions given in paragraph 2.1.2 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, jiggling 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.

b) 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.

c) **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.

2.1.4.3 Issue of repair design approval

a) Approval by DOA holder

Approval of minor repairs through the use of procedures agreed with the CAA, means an approval issued by the DOA holder without requiring CAA involvement. The CAA will monitor application of this procedure within the surveillance plan for the relevant organisation. When the organisation exercises this privilege, the repair release documentation will clearly show that the approval is under their DOA privilege.

b) Previously approved data for other applications

When it is intended to use previously approved data for other applications applicability and effectiveness will 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.

c) 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 will be classified as above and the service period defined at the approval of the repair.

d) Fatigue and damage tolerance

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

2.1.4.4 Unrepaired damage

When a damaged product, part or appliance, is left unrepaired, and is not covered by previously approved data, an evaluation of the damage for its airworthiness consequences must be made. 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.

Notes: (not for inclusion in the Exposition)

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 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.

2.1.5 Issue of information or instructions (Design Organisation Privilege)

Notes: (not for inclusion in the Exposition)

The information or instructions referred to in A8-21 16.3 c) are issued by a DOA holder to provide owners, operators or maintenance organisations the necessary data to implement a change, repair or inspection. This information or instructions may be issued in a format of a Service Bulletin as defined in ATA 100 system, or in Structural Repair Manuals, Maintenance Manuals, Engine and Propeller Manuals etc.

The preparation of this data involves design, production and inspection. As the overall responsibility, through the privilege, is allocated to the DOA holder, the three aspects should be properly coordinated by the DOA to obtain the privilege "to issue information or instructions containing a statement that the technical content is approved", and a procedure should exist.

Procedure

The DOA holder should establish a procedure addressing the following points:

- *preparation;*
- *verification of technical consistency with corresponding approved change(s), repair(s) or approved data, including effectivity, description, effects on airworthiness and environmental protection, especially when limitations are changed;*
- *verification of the feasibility in practical applications;*
- *authorised signatories.*

The procedure should include the information or instructions prepared by subcontractors or vendors and declared applicable to its products by the DOA holder.

Statement

The statement provided in the information or instructions should also cover the information or instructions prepared by subcontractors or vendors and declared applicable to its products by the DOA holder.

The technical content is related to the design data and accomplishment instructions, and its approval means that:

- *the design data has been appropriately approved; and*
- *the instructions provide for practical and well defined installation/inspection methods and when accomplished the product is in conformity with the approved design data.*

2.1.6 Design Assurance System Monitoring

The design assurance system will be audited in accordance with 2.2 below as indicated on the internal audit plan. The auditor will have sufficient knowledge of the design organisation, as well as audit experience/training, to undertake this activity without reliance on the area being audited.

2.2 **Quality System**

Reference A8-21 paragraphs 6 and 7.1 k)

Notes: (not for inclusion in the Exposition)

A general description of the quality system should be entered here, also referring to any ISO 9000 approval or similar held e.g. "The company incorporates AS9100 as its basic quality system but understands that it should not compromise in anyway the rules and regulations required by A8-21". It should be noted that A8-21 does not require any other quality approval to be held and no credit is given for such approvals during the CAA assessment process.

The quality system should be documented in such a way that the documentation can easily be made available to personnel who need to use it for performing their normal duties, in particular:

- *Procedures, instructions, data etc. are available in a written form;*
- *Distribution of relevant procedures to offices/persons is made in a controlled manner;*
- *Procedures which identify persons responsible for the prescribed actions are established;*
- *The updating process is clearly described.*

2.2.1 **Quality Audit of Organisational Procedures**

Suggested subject headings:

Company Audit Policy

Definition of the Quality System; independence; access to Accountable Manager

Annual Review of Procedures

Audit programme; Adequate and satisfactory facilities; Compliance with approved procedures; Dates and timescales; Audit of suppliers and Subcontractors; Audit against BCAR A8-21.

2.2.2 **Quality Audit of Product**

Notes: (not for inclusion in the Exposition)

As well as audits of the quality system, an audit of the actual output of an Organisation should be regularly undertaken; generally referred to as a vertical or product audit. The frequency depends on the throughput of work but a minimum of one product audit a year should be achieved. Where an organisation undertakes both design and production activity, then output from both activities should be sampled.

Design

The starting point of the audit is a finished (or semi-finished) certification project, design change or repair, from which the associated design records should be reviewed to ensure that the identification of the certification basis, development of the certification plan (if appropriate), classification of the change and subsequent approval either by the Organisation or by application to the CAA has been carried out in accordance with the Organisation's procedures. This review should ensure that all design calculations and verification checks, together with any analyses or test reports associated with qualification testing have been approved by appropriately authorised personnel. The availability and control of referenced design data should be reviewed, together with records for any design activity carried out by subcontractors. When thoroughly completed, such a product audit will have touched upon most design assurance procedures.

Production

The starting point of the audit is a finished (or semi-finished) part or product, from here associated production records and design data should be reviewed, ensuring correct arrangements are in place between design and production. Physical inspection and test of the item is also appropriate with critical dimensions being checked and possibly re-testing on a test rig and comparing results with those documented. Following through to incoming raw material release and subcontractor records is also expected. When thoroughly completed, such a product audit will have touched upon most production quality procedures.

2.2.3 Quality Audit Remedial Action Procedure

Suggested subject headings:

- Quality audit report feedback system
- Accountable Manager / senior management review meeting
- Corrective action and timescale - remedial action - disciplinary action
- Management responsibilities for corrective action and follow-up
- Quality audit and feedback records.

2.2.4 Quality Audit Personnel

Suggested subject headings:

- Nominated personnel
- Allocated man-hours (if not full-time)
- Independence of quality audit personnel
- Experience, training and competence of quality audit personnel

2.2.5 Certifying Staff, Qualification, Training and Procedures

Suggested subject headings:

- Qualifications, experience, training and competence requirements
- Examination, test and assessment procedures
- Continuation training
- Qualifying subcontractor's personnel (if applicable)
- Authorisations issue and renewal procedures

Notes: (not for inclusion in the Exposition)

Certifying Staff are nominated by the organisation (section 1.5) in relation to production to ensure that products, parts and appliances qualify for release on Statements of Conformity or Approved Certificates.

Certifying Staff nominated by the organisation (section 1.5) in relation to design are those making decisions affecting airworthiness and environmental protection. i.e. Compliance Verification Engineers.

The qualification of Certifying Staff is based on their knowledge, background and experience and specific training (or testing) established by the organisation to ensure that it is appropriate to the product, part, or appliance.

Training must be given to develop a satisfactory level of knowledge of organisation procedures and aviation regulations relevant to the particular role. For that purpose the organisation must

define its own standards for training, including pre-qualification standards, for personnel to be identified as certifying staff.

Training policy is part of the Design Assurance/Quality System and its appropriateness forms part of the investigation by the CAA within the organisation approval process and subsequent surveillance of persons proposed by managers.

The training must be updated in response to experience gained and changes in technology.

A feedback system to ascertain that the required standards are being maintained must be put in place to ensure the continuing compliance of personnel to authorisation requirements.

2.2.6 Concessions Procedure

Notes: (not for inclusion in the Exposition)

Any non-compliance with design data (e.g. oversize hole) precludes the release of the item on an Approved Certificate as the certificate states "Certifies that the items identified above were manufactured in conformity with approved design data". In order to be able to release the item it must conform with the design data, this can be achieved by either:

- *Reworking the item*
- *Amending the design data*

Only the responsible design organisation can amend the design data and this usually takes the form of a concession (i.e. an additional piece of design data specific to an individual item, not actually amending a drawing). A concession is only valid if approved under the responsible design organisations procedures. If neither of the two options is appropriate the item is scrapped.

The procedure described here should consider these points and make it clear that the approval of the design organisation is necessary for the implementation of a concession.

2.2.7 Audit for Compliance with BCAR A8-21

Independent audits are conducted in order to monitor compliance with A8-21 and are the responsibility of the Quality Manager.

An audit schedule that ensures all applicable elements of A8-21 are audited annually is maintained by the Quality Manager.

2.3 **Sub-contract Control**

Reference A8-21 paragraph 6.1

2.3.1 **Supplier/Sub-Contractor Evaluation Procedure**

Notes: (not for inclusion in the Exposition)

The approval holder is responsible for determining and applying acceptance standards for physical condition, configuration status and conformity of supplied products, parts, appliances or raw materials, whether to be used in production or delivered to customers as spare parts. This responsibility also includes buyer furnished equipment, or customer supplied items.

To discharge this responsibility the quality system needs an organisational structure and procedures to adequately control external suppliers.

Control can be based upon use of the following techniques (as appropriate to the system or product orientation necessary to ensure conformity):

- qualification and auditing of supplier's quality system;*
- evaluation of supplier capability in performing all manufacturing activities, inspections and tests necessary to establish conformity of parts or appliances to type design;*
- first article inspection, including destruction if necessary, to verify that the article conforms to the applicable data for new production line or new supplier;*
- incoming inspections and tests of supplied parts or appliances that can be satisfactorily inspected on receipt;*
- identification of incoming documentation and data relevant to the showing of conformity to be included in the certification documents;*
- a vendor rating system which gives confidence in the performance and reliability of this supplier;*
- any additional work, tests or inspection which may be needed for parts or appliances which are to be delivered as spare parts and which are not subjected to the checks normally provided by subsequent production or inspection stages.*

The approval holder may rely on inspection/tests performed by supplier if it can establish that:

- personnel responsible for these tasks satisfy the competency standards of the approval holder's quality system*
- quality measurements are clearly identified*
- the records or reports showing evidence of conformity are available for review and audit.*

The control of suppliers holding a POA or DOA for the parts, appliances or design services to be supplied can be reduced, to a level at which a satisfactory interface between the two quality systems can be demonstrated. Thus, an approval holder can rely upon documentation for parts or appliances released under a suppliers CAA Approval.

A supplier who does not hold a POA or DOA is considered as a sub-contractor under the direct control of the approval holders quality system. The approval holder retains direct responsibility for inspections/tests carried out either at its own facilities or at supplier's facilities.

2.3.2 **Supplier/Sub-Contractor List**

Notes: (not for inclusion in the Exposition)

A list can be incorporated in the exposition but this can result in frequent amendments due to the nature of this kind of information. A description of the procedure governing the list covering who is responsible for it etc. should be either included or precede and cross referred to.

2.4 **Production Control**

Reference A8-21 paragraph 6.2

Note. The wording below is for illustrative purposes, wording appropriate to your organisation should be used in your actual exposition.

2.4.1 **Acceptance/Inspection of Incoming Materials**

The receipt, inspection and processing of materials into the Company shall be carried out in accordance with Procedure ref. 'xxx', 'Receipt of Components, Parts and Materials' and is the responsibility of the Production Manager.

All incoming items will be inspected for compliance with the purchase order requirements.

Records will be kept, to ensure that all parts and materials are traceable back from the point of use to source via its release documentation.

Notes: (not for inclusion in the Exposition)

All parts and materials coming from external parties should be identified and inspected to ascertain that they have not been damaged during transport or unpacking, that the incoming parts and materials have the appropriate and correct accompanying documentation and that the configuration and condition of the parts or materials is as laid down in that documentation.

Only on completion of these checks and of any incoming further verifications laid down in the procurement specification, may the part or material be accepted for warehousing and used in production. This acceptance should be certified by an inspection statement.

A suitable recording system should allow reconstruction at any time of the history of every material or part.

The areas where the incoming checks are carried out and the materials or parts are stored pending completion of the checks should be physically segregated from other departments.

2.4.2 **Stores Procedures**

The control of storage, identification and release of materials shall be in accordance with Procedure ref. 'xxx', 'Storage & Handling in Approved Stores' and is the responsibility of the Production Manager.

Materials shall be stored in designated locations, clearly identified and segregated from other components.

Records will be kept for materials having a shelf life. The environmental conditions within storage areas shall be monitored and maintained to a satisfactory standard, in accordance with the appropriate specification.

The control of materials and parts throughout the Company, from receipt, through storage and issue, to use and dispatch, will be controlled by the use of appropriate systems. These systems will demonstrate how only materials/components appropriate to the work being undertaken are used in accordance with the approved design data.

Notes: (not for inclusion in the Exposition)

Storage areas should be protected from dust, dirt, or debris, and adequate blanking and packaging of stored items should be practised.

All parts should be protected from extremes of temperatures and humidity and, where needed, temperature-controlled or fully air-conditioned facilities should be provided.

Racking and handling equipment should be provided such as to allow storage, handling and movement of parts without damage.

Lighting should be such as to allow safe and effective access and handling, but should also cater for items which are sensitive to light e.g., rubber items.

Care should be taken to segregate and shield items which can emit fumes (e.g., wet batteries), substances or radiation (e.g., magnetic items) which are potentially damaging to other stored items.

Procedures should be in place to maintain and record stored parts identities and batch information.

Access to storage areas should be restricted to authorised personnel who are fully trained to understand and maintain the storage control arrangements and procedures.

Provisions should be made for segregated storage of non-conforming items pending their disposition. All materials and parts which have been identified at any stage in the manufacturing process as not conforming to the specific working and inspection instructions must be suitably identified by clearly marking or labelling, to indicate their non-conforming status.

2.4.3 Acceptance of Tools and Equipment

Acceptance of tools and equipment will be as described by Procedure ref. 'xxx', 'Acceptance of Tools and Test Equipment' and is the responsibility of the Production Manager.

Tools and equipment to be used for production purposes will be those specified by the Approved Data except where an appropriately approved equivalent is available and/or acceptable.

2.4.4 Calibration Control Procedure

Calibration of tools, jigs and equipment is detailed in Procedure ref. 'xxx', 'Tools and Test Equipment Control' and is the responsibility of the Quality Manager.

Tools subject to calibration (traceable to the appropriate national standards i.e. UKAS) will be uniquely identified with details of calibration expiry recorded both on the controlling computer system and on the item involved. The initial inspection and calibration period will initially be set in accordance with manufacturers or design authority's recommendations. Historical data will be maintained to allow for variation to the recommended periods.

A list of tools and test equipment due calibration will be generated monthly and provided to each workshop.

2.4.5 Use of Tools and Equipment by Staff

The use of tools and equipment by staff is detailed in Procedure ref. 'xxx', 'Tools and Test Equipment Control' and is the responsibility of the Production Manager.

All tools and equipment used in the workshop will be stored and held on site, under the control and protection of the production staff. When not in use, tools and equipment shall be held in an environment suited to the prevention of deterioration and damage.

Staff required to use complex or specialist items of tooling or equipment will be given appropriate training.

2.4.6 **Production Procedure**

Procedure ref. 'xxx', 'Manufacturing Under A8-21' is the responsibility of the Production Manager. It defines the process for controlling the manufacture of parts, from receipt of the design data through contract review; production engineering; purchasing; material provisioning; manufacture in accordance with the approved data; inspection and release.

2.4.7 **Production Documentation and its Control**

Procedure ref. 'xxx' 'Manufacturing Under A8-21' covers the issue, use and completion of manufacturing documentation, and is the responsibility of the Production Manager.

Manufacturing Stage Sheets shall be produced and controlled by the Technical Services Department. Where approved data is transcribed onto the Manufacturing Stage Sheet from approved sources, the accuracy of the transcription shall be verified and reference to the source shall be made.

The issue status of any work document will be checked immediately prior to its use. Details recorded shall include:

- a) A description of the work carried out.
- b) Part, Serial and Approved Stores Serial Number of any parts or materials used.
- c) Actual test figures obtained, where specified as a requirement, including; NDT results, test results, dimensions, clearances, etc.

2.4.8 **Technical Records Control**

Procedure ref. 'xxx' 'Technical Records Control' covers the supply and updating of approved technical data and is the responsibility of the Quality Manager. This ensures that the technical documentation required by production is available at the appropriate issue/configuration status.

Manufacturing will be carried out in accordance with Approved Technical Data.

The Engineering Manager shall be responsible for the collation, distribution and control of work stage sheets, drawings and specifications.

Record retention will be in accordance with procedure ref. 'xxx' 'Technical Records Control'. This procedure outlines the type of records to be retained and the time period that they will be held.

The type of document and time of retention period defined, will ensure that the information required by the design authority to support airworthiness will be available should it be required for investigation purposes.

Notes: (not for inclusion in the Exposition)

Records within a production environment satisfy two purposes. Firstly, they are required, during the production process to ensure that products, parts, or appliances are in conformity with the controlling data throughout the manufacturing cycle. Secondly, certain records of milestone events are needed to subsequently provide objective evidence that all prescribed stages of the production process have been satisfactorily completed and that compliance with the applicable design data has been achieved.

Therefore, the approved production organisation should implement a system for the compilation and retention of records during all stages of manufacture, covering short-term and long-term records appropriate to the nature of the product and its production processes.

The management of such information should be subject to appropriate procedures in the Quality System required by 6.

All forms of recording media are acceptable (paper, film, magnetic, ...) provided they can meet the required duration for archiving under the conditions provided.

The related organisation procedures should:

- *Identify records to be kept.*
- *Describe the organisation of and responsibility for the archiving system (location, compilation, format) and conditions for access to the information (e.g., by product, subject).*
- *Control access and provide effective protection from deterioration or accidental damage.*
- *Ensure continued readability of the records.*
- *Demonstrate to the CAA proper functioning of the records system.*
- *Clearly identify the persons involved in conformity determination.*
- *Define an archiving period for each type of data, taking into account importance in relation to conformity determination, subject to the following:*
 - a) *Data which supports conformity of a product, part, or appliance should be kept for not less than three years from the issue date of the related UK Statement of Conformity or Approved Certificate.*
 - b) *Data considered essential for continuing airworthiness should be kept throughout the operational life of the product, part or appliance.*
- *Ensure that the recording and record-keeping system used by the partners, suppliers and sub-contractors meet the objective of conformity of the product, part or appliance with the same level of confidence as for their own manufacture. They should define in each case who is to retain the record data (organisation or partner, supplier or sub-contractor). They should also define method for surveillance of the recording/record keeping system of the partners, suppliers or sub-contractors.*

2.4.9 **Release to Service Procedure**

Procedure ref. 'xxx' 'Approved Certificate' covers the process of release to service on a CAA Approved Certificate after the completion of all work and mandatory requirements and is the responsibility of the Quality Manager.

Certifying Staff will ensure that the manufactured item has been completed in accordance with the approved design data; the procedures specified in this exposition and that the accompanying records are complete, before signing the Approved Certificate

Certifying Staff shall sign the Approved Certificate and stamp it with their personal Authorisation stamp. They may only sign and stamp the release documents of products for which they are authorised.

The Approved Certificate shall be annotated with the Works Order Number, which will provide traceability back to the Manufacturing Stage Sheets.

Notes: (not for inclusion in the Exposition)

CAA Approved Certificate (parts and appliances)

The detailed completion instructions of the CAA Approved Certificate are in Supplement 1 to A8-21 and should be either referenced by this procedure and provided to Certifying Staff, or copied into the procedure.

The Approved Certificate, when used as a release certificate as addressed in 18 g) ii) and iii) may be issued in two ways:

1) As an airworthiness release, only when by virtue of the arrangement described in 2.3 b) and c), it can be determined that the part conforms to the approved design data and is in condition for safe operation.

2) As a Conformity Certificate, only when by virtue of the arrangement described in 2.3 b) and c), it can be determined that the part conforms to applicable design data which is not (yet) approved, for a reason that is indicated in Block 13. Parts released with an Approved Certificate as a Conformity Certificate are not eligible for installation in a type certificated aircraft.

The Approved Certificate should only be used for Conformity release purposes when it is possible to indicate the reason that prevents its issue for airworthiness release purposes.

CAA Statement of Conformity (aircraft)

Before issue of the UK Statement of Conformity, the holder of a production organisation approval should make an investigation so as to be satisfied in respect of each of the items listed below. The documented results of this investigation should be kept on file by the POA holder. Certain of these items may be required to be provided (or made available) to the operator or owner of the aircraft, the CAA or the Aviation Authority of the state of registry.

- 1 Equipment or modifications approved by the importing country but not by the UK CAA.*
- 2 Identification of products, parts or appliances that are not new or are furnished by the buyer or future operator (Buyer Furnished Equipment or BFE).*
- 3 Technical records which identify the location and serial numbers of significant components.*
- 4 Log book and a modification record book for the aircraft as required by the CAA.*
- 5 Log books for products installed as part of the type design as required by the CAA.*
- 6 A weight and balance report for the completed aircraft.*
- 7 A record of missing items or defects that do not affect airworthiness, for example furnishing or BFE (Items may be recorded in a technical log or other suitable arrangement such that the operator and CAA are formally aware).*
- 8 Product support information required by other regulations, such as a Maintenance Manual, a Parts Catalogue, or MMEL all of which are to reflect the actual build standard of the particular aircraft. Also an electrical load analysis and a wiring diagram.*
- 9 Records that demonstrate completion of maintenance tasks appropriate to the test flight flying hours recorded by the aircraft. These records should show the relationship of the maintenance status of the particular aircraft to the manufacturers recommended maintenance task list and the Maintenance Review Board (MRB) document/report.*
- 10 Details of the serviceability state of the aircraft in respect of the fuel & oil contents and provision of operationally required emergency equipment such as life rafts, etc.*
- 11 Details of the approved interior configuration if different from that approved as part of the type design.*
- 12 An approved Flight Manual that conforms to the build standard and modification state of the particular aircraft shall be available.*
- 13 Show that inspections for foreign objects at all appropriate stages of manufacture has been satisfactorily performed.*
- 14 The registration has been marked on the exterior of the aircraft as required by national legislation. Where required by national legislation fit a fireproof owners nameplate.*

- 15 Where applicable there should be a certificate for noise and for the aircraft radio station.
- 16 The installed compass and or compass systems have been adjusted and compensated and a deviation card displayed in the aircraft.
- 17 Software criticality list.
- 18 A record of rigging and control surface movement measurements.
- 19 Details of installations that will be removed before starting commercial air transport operations (e.g., ferry kits for fuel, radio or navigation).
- 20 Where maintenance work has been performed under the privilege of 17(d) issue a release to service that includes a statement that the aircraft is in a condition for safe operation.
- 21 List of all applicable Service Bulletins and airworthiness directives that have been implemented.

2.4.10 Control of Computer Records

Computer based records will be backed up at a minimum frequency of once every 24 hours by the service provider. Back-up tapes will be held in a secure, fireproof cabinet and regularly checked to ensure that data will actually recover should the "working records" be lost.

2.4.11 Specific Production Procedures

All information pertaining to the manufacture of products under the scope of the A8-21 Approval can be found in Procedure ref. 'xxx', 'Manufacturing Under A8-21'.

2.4.12 Airworthiness Co-ordination with Design Authority

All customer orders will be subject to Procedure ref. 'xxx' 'Contract Review Procedure' and will be assessed to ensure the work is within the scope of approval and that an appropriate arrangement with the responsible design organisation is in place. This procedure and process is the responsibility of the Quality Manager.

An acceptable design arrangement is included in section 3 of this exposition and this information, as a minimum, in either this format or any other dictated by the design organisation, should preferably be obtained prior to acceptance of the order, but must be obtained prior to release on an Approved Certificate. Failure to obtain such an arrangement will prevent the parts being delivered on an Approved Certificate.

Notes: (not for inclusion in the Exposition)

When the design and production organisations are two separate legal entities a Direct Delivery Authorisation must be available for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.

Where there is no general agreement for Direct Delivery Authorisation, specific permissions may be granted by the Design Organisation.

2.4.13 Off-Site Working Control Procedures

All production within the scope of the Organisation Approval shall be undertaken in our facilities. No 'Off-Site' procedure is therefore necessary.

Note. Procedures to control working parties operating away from the approved premises are not normally needed. However if this is an expected activity the procedures should be detailed here.

2.4.14 **Pre-delivery Aircraft Maintenance Procedures**

Not Applicable

Notes: (not for inclusion in the Exposition)

Unless the organisation manufactures complete aircraft this section is not necessary.

The applicant may apply for terms of approval, which cover maintenance of a new aircraft that it has manufactured, as necessary to keep it in an airworthy condition, but not beyond the point at which the applicable operational rules require maintenance to be performed by an approved maintenance organisation. If the production organisation intends to maintain the aircraft beyond that point, it would have to apply for and obtain an appropriate maintenance approval.

When the CAA is satisfied that the procedures required by paragraph 6.2 of A8-21 are satisfactory to control maintenance activities so as to ensure that the aircraft is airworthy, this capability will be stated in the terms of approval.

Examples of such maintenance activities are:

- *Preservation, periodic inspection visits, etc.*
- *Embodiment of a Service Bulletin.*
- *Application of airworthiness directives.*
- *Repairs.*
- *Maintenance tasks resulting from special flights.*
- *Maintenance tasks to maintain airworthiness during flight training, demo flights and other non-revenue flights.*

Any maintenance activities must be recorded in the Aircraft Log Book. It must be signed by certifying staff for attesting the conformity of the work to the applicable airworthiness data.

In some cases the Aircraft Log Book is not available, or the production organisation prefers to use a separate form (for instance for a large work package or for delivery of the aircraft to the customer). In these cases, production organisations must use the Certificate of Release to Service shown in Supplement 3 which must subsequently become part of the aircraft maintenance records.

2.4.15 **Production Control of Critical Parts**

If the responsible Design Organisation identifies a critical part any associated special procedures requested will be adhered to.

Note. Where the production organisation does not manufacture critical parts this section should be marked N/A.

2.4.16 **Inspection and Testing**

Procedure ref. 'xxx' 'Manufacturing Under A8-21' defines the process for '1st Article' and 'Verification' inspections and is the responsibility of the Head of Operations. Testing of products will be to the specifications/standards laid down by the Design Organisation.

Notes: (not for inclusion in the Exposition)

The purpose of the Inspection System is to check at suitable points during production and provide objective evidence that the correct specifications are used, and that processes are carried out strictly in accordance with the specification.

All items produced should be subject to inspection to be carried out at suitable phases which permit an effective verification of conformity with the design data. These inspections may provide for the execution of tests to measure performances as set out in the applicable design data. Considerations of complexity of the item and/or its integration in the next level of production will largely determine the nature and time for these tests, for example:

- *appliances - will require full functional testing to the specifications;*
- *parts - will at least require basic testing to establish conformity, but due allowance may be made for further testing carried out at the next level of production;*
- *material - will require verification of its stated properties.*

During the manufacturing process, each article should be inspected in accordance with a plan which identifies the nature of all inspections required and the production stages at which they occur. The plan should also identify any particular skills or qualification required of person(s) carrying out the inspections (e.g., NDT personnel).

If the parts are such that, if damaged, they could compromise the safety of the aircraft, additional inspections for such damage should be performed at the completion of each production stage.

2.4.16.1 Flight Testing

Note. Organisations holding a BCAR A8-9 approval should refer to those procedures here.

For flight testing of ex-military aircraft a CAA Permit to Fly for Test is required unless undertaken within the scope of the A8-9 approval.

2.4.17 Occurrence Reporting Procedure

Mandatory reporting is carried out in accordance with CAA publication CAP 382, Mandatory Occurrence Reporting Scheme, and Procedure ref. 'xxx' 'Reporting Mandatory Occurrences' which is the responsibility of the Quality Manager.

All staff will be encouraged to report non-conforming products and un-airworthy conditions. Representation will then be made to the responsible company/department to ensure corrective and preventative action is taken and if appropriate the Design Authority and regulatory authorities notified.

3 APPENDICIES

3.1 Sample of Documents

3.1.1 Approval Certificate and Terms of Approval

Include copy of these.

3.1.2 Approved Certificate

Include the organisation specific Approved Certificate with name address etc. Could include completion instructions if no other procedure covers this.

3.1.3 Aircraft Statement of Conformity

Include if you intend to produce complete aircraft.

3.1.4 **Design Arrangement**

ARRANGEMENT	
The undersigned agree on the following commitments:	Relevant interface procedures
The design organisation [NAME] takes responsibility to: <ul style="list-style-type: none"> • assure correct and timely transfer of up-to-date applicable design data (e.g., drawings, material specifications, dimensional data, processes, surface treatments, shipping conditions, quality requirements, etc.) to the production organisation approval holder [NAME]; • provide visible statement(s) of approved design data. 	
The production organisation approval holder [NAME] takes responsibility to: <ul style="list-style-type: none"> • assist the design organisation [Name] in dealing with continuing airworthiness matter and for required actions; • assist the design organisation [Name] in case of products prior to type certification in showing compliance with airworthiness requirements; • develop, where applicable, its own manufacturing data in compliance with the airworthiness data package. 	
The design organisation [Name] and the POA holder [Name] take joint responsibility to: <ul style="list-style-type: none"> • deal adequately with production deviations and non conforming parts in accordance with the applicable procedures of the design organisation and the production organisation approval holder; • achieve adequate configuration control of manufactured parts, to enable the POA holder to make the final determination and identification for conformity or airworthiness release and eligibility status. 	
The scope of production covered by this arrangement is detailed in ... [DOC REF/ ATTACHED LIST]	
[When the design organisation is not the same legal entity as the production organisation approval holder.] Transfer of approved design data. The TC/STC holder [NAME] acknowledges that the approved design data provided, controlled and modified in accordance with the arrangement are recognised as approved.	
[When the design organisation is not the same legal entity as the production organisation approval holder.] Direct Delivery Authorisation. This acknowledgment includes also [OR does not include] the general agreement for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.	
for the [NAME of the design organisation] date: signature: [NAME in block letters]	for the [NAME of the POA holder] date: signature: [NAME in block letters]

Instructions for completion of Design Arrangement:

Title: The title of the relevant document must clearly indicate that it serves the purpose of a design/production interface arrangement in accordance with A8-21 2.3 c).

Commitment: The document must include the basic commitments between the design organisation and the POA holder.

Relevant Procedures: Identify an entry point into the documentary system of the organisations with respect to the implementation of the arrangement (for example a contract, quality plan, expositions, common applicable procedures, working plans etc.).

Scope of arrangement: The scope of arrangement must state by means of a list or reference to relevant documents those products, parts or appliances that are covered by the arrangement.

Transfer of applicable design data: Identify the relevant procedures for the transfer of the applicable design data required by 2.3 c) from the design organisation to the POA holder.

The means by which the design organisation advises the POA holder whether such data is approved or not approved must also be identified.

Direct Delivery Authorisation: Where the design organisation and the POA holder are separate legal entities the arrangement must clearly identify whether authorisation for direct delivery to end users is permitted or not.

Where any intermediate production/design organisations are involved in the chain between the original design organisation and the POA holder evidence must be available that this intermediate organisation has received authority from the design organisation to grant Direct Delivery Authorisation.

Signature: The basic document must be signed mutually by the authorised representatives of the design organisation and the POA holder.

Chapter A8-22 Approval of Qualified Entities – Group QE

1 Scope

An A8-22 Qualified Entity is an organisation that carries out airworthiness investigations on behalf of the CAA and submits reports and recommendations to the CAA. Article 165 of the Air Navigation Order 2005 (as amended) provides for persons to be approved to submit reports to the CAA. Set out below are the requirements to be met by organisations seeking UK national approval as Qualified Entities.

2 Eligibility

- 2.1 Any natural or legal person ('organisation') shall be eligible as an applicant for an approval under this Requirement.
- 2.2 The applicant shall satisfy the CAA that the scope of approval applied for is appropriate on an ongoing basis.

3 Application

Each application for the approval of a Qualified Entity shall be made in a form and manner established by the CAA and shall include an outline of the terms of approval and associated privileges requested.

4 Issue of approval

An organisation shall be entitled to be approved as a Qualified Entity by the CAA when it has demonstrated compliance with the applicable requirements under this Requirement.

5 Requirement for Grant of Approval

- 5.1 The organisation shall demonstrate that it complies with the criteria for qualified entities defined in Annex V to the European Regulation (EC) 216/2008, see Supplement 1 to this Chapter.
- 5.2 The organisation shall demonstrate that it has established and is able to maintain a quality system for the control and supervision of the design, production, flight testing and/or maintenance of products, parts and appliances as applicable to this application. This quality system shall be such as to enable the organisation:
 - a) to ensure that the design of the products, parts and appliances or the design change thereof, comply with the applicable approval basis and environmental protection requirements or equivalent; and
 - b) to ensure that each product, part or appliance produced conforms to the applicable design data and is in condition for safe operation; and
 - c) to ensure that its responsibilities are properly discharged in accordance with:
 - i) the appropriate provisions of this Requirement; and
 - ii) the terms of approval issued under this Requirement; and

- d) to independently monitor the compliance with, and adequacy of, the documented procedures of the quality system. This monitoring shall include a feedback system to a person or a group of persons having the responsibility to ensure corrective actions.

5.3 The organisation shall demonstrate, on the basis of the information submitted in the exposition that:

- a) with regard to general approval requirements, facilities, working conditions, equipment and tools, processes and associated materials, number and competence of staff, general organisation and coordination are adequate to discharge the organisation's obligations under this Requirement;
- b) with regard to all necessary airworthiness, noise, fuel venting and exhaust emissions data:
 - i) the organisation is in receipt of such data from the CAA, and from the holder of, or applicant for, any type-approval or design approval, to determine conformity with the applicable design data;
 - ii) such data are kept up to date and made available to all personnel who need access to such data to perform their duties;
- c) with regard to management and staff:
 - i) a manager has been nominated by the organisation, and is accountable to the CAA. Their responsibility within the organisation shall consist of ensuring that all tasks are performed to the required standards and that the organisation is continuously in compliance with the data and procedures identified in the exposition;
 - ii) a person or group of persons have been nominated to ensure that the organisation is in compliance with these Requirements, and are identified, together with the extent of their authority. Such person(s) shall act under the direct authority of the accountable manager referred to in subparagraph i). The persons nominated shall be able to show the appropriate knowledge, background and experience to discharge their responsibilities;
 - iii) staff at all levels have been given appropriate authority to be able to discharge their allocated responsibilities and that there is full and effective coordination within the organisation in respect of airworthiness, noise, fuel venting and exhaust emission data matters; and
- d) with regard to certifying staff, authorised by the organisation to sign the documents issued under the privileges of this approval:
 - i) the knowledge, background (including other functions in the organisation), and experience of the certifying staff are appropriate to discharge their allocated responsibilities;
 - ii) the organisation maintains a record of all certifying staff, which shall include details of the scope of their authorisation;
 - iii) certifying staff are provided with evidence of the scope of their authorisation.

6 Exposition

6.1 The organisation shall submit to the CAA an exposition providing the following information:

- a) A statement signed by the accountable manager confirming that the exposition and any associated manuals which define the approved organisation's compliance with this Requirement will be complied with at all times;
 - b) The title(s) and names of nominated personnel accepted by the CAA;
 - c) The duties and responsibilities of the nominated personnel including matters on which they may deal directly with the CAA on behalf of the organisation;
 - d) An organisational chart showing associated chains of responsibility of the nominated personnel;
 - e) A list of certifying staff;
 - f) A general description of manpower resources;
 - g) A general description of the facilities located at each address specified in the organisation's certificate of approval;
 - h) A general description of the scope of work relevant to the terms of approval;
 - i) The procedure for the notification of organisational changes to the CAA;
 - j) The distribution and amendment procedure for the exposition; and
 - k) A description of the quality system and associated procedures.
- 6.2 The exposition shall be amended as necessary to remain an up-to-date description of the organisation, and copies of any amendments shall be supplied to the CAA.

7 Changes to the approved organisation

- 7.1 After the issue of the organisation approval, each change to the organisation, particularly changes to the quality system, that is significant to the showing of compliance, conformity or to the airworthiness and environmental protection of the product, part or appliance, shall be approved by the CAA.
- 7.2 A change of the location of the facilities of the approved organisation is deemed a change of significance and therefore necessitates application to the CAA.
- 7.3 An application for approval shall be submitted to the CAA and before implementation of the change the organisation shall demonstrate that it will continue to comply with these Requirements after implementation.

8 Transferability

Approval as a Qualified Entity is not transferable, except as a result of a change in ownership. A change of ownership is considered a significant change and necessitates application to the CAA.

9 Terms of approval

- 9.1 The terms of approval shall identify the scope of work, the categories of products, parts and appliances, for which the holder is entitled to exercise the privileges of this approval.
- 9.2 Those terms shall be issued as part of an organisation approval.

10 Changes to the terms of approval

Each change to the terms of approval shall be approved by the CAA. An application for a change to the terms of approval shall be made in a form and manner established by the CAA. The organisation shall comply with the applicable requirements of A8-22.

11 Investigations

11.1 The organisation shall make arrangements that allow the CAA to make any investigations necessary to determine compliance and continued compliance with the applicable requirements of this Chapter.

11.2 The organisation shall allow the CAA to review any report and make any inspection and perform or witness any flight and ground test necessary to check the validity of the compliance statements submitted.

12 Findings

12.1 When objective evidence is found by the CAA showing non-compliance of the holder of an organisation approval with the applicable requirements, the finding shall be classified as follows:

- a) A level one finding is any non-compliance with these Requirements that could lead to uncontrolled non-compliances with applicable requirements and which could affect the safety of the aircraft.
- b) A level two finding is any non-compliance with these Requirements that is not classified as level one.

12.2 After receipt of notification of findings:

- a) In case of a level one finding, the holder of the organisation approval shall demonstrate corrective action to the satisfaction of the CAA within a period of no more than 21 working days after written confirmation of the finding;
- b) In case of level two findings, the corrective action period granted by the CAA shall be appropriate to the nature of the finding but in any case initially shall not be more than six months. In certain circumstances and subject to the nature of the finding the CAA may extend the six-month period subject to a satisfactory corrective action plan.

12.3 In case of level one or level two findings, the organisation approval may be subject to a partial or full suspension or revocation. The holder of the organisation approval shall provide confirmation of receipt of the notice of suspension or revocation of the organisation approval in a timely manner.

13 Duration and continued validity

13.1 The approval of a Qualified Entity shall be issued for an unlimited duration. It shall remain valid unless:

- a) the organisation fails to demonstrate compliance with the applicable requirements;
or
- b) the CAA is prevented by the organisation from performing its investigations; or

- c) there is evidence that the organisation cannot maintain satisfactory control of the activities under the approval; or
- d) the organisation no longer meets the eligibility requirements for this approval; or
- e) the certificate has been surrendered or revoked.

13.2 Upon surrender or revocation, the certificate shall be returned to the CAA.

14 Privileges

The Qualified Entity shall be entitled, within its terms of approval and under the relevant procedures of the quality system:

- a) to certify to the CAA that the design, construction and flying characteristics of an aircraft comply with the applicable requirements;
- b) to make recommendations in respect of airworthiness certificates to the CAA, which may be accepted without further verification;
- c) to validate non-expiring airworthiness certificates;
- d) to submit reports to the CAA;
- e) to control test flights;
- f) to issue information or instructions containing the following statement: 'The technical content of this document is approved under the authority of the UK CAA organisation approval reference: [x/y/z].'

15 Obligations of the holder

The holder of an organisation approval shall, as applicable:

- a) ensure that the exposition and the documents to which it refers, are used as basic working documents within the organisation;
- b) maintain the organisation in conformity with the data and procedures approved for the organisation approval;
- c) determine that the design of products, or changes or repairs thereof, as applicable, comply with applicable requirements and have no unsafe feature;
- d) ensure that required manuals or instructions for continued airworthiness, or changes thereof, are reviewed and approved either by the organisation or the CAA as appropriate;
- e) provide to the CAA information or instructions related to Airworthiness Directives and Mandatory Permit Directives;
- f) determine that each aircraft conforms to the type design and is in condition for safe operation prior to making recommendation to the CAA;
- g) record all details of work carried out;
- h) establish and maintain an internal occurrence reporting system in the interest of safety, to enable the collection and assessment of reports in order to identify adverse trends or to address deficiencies. This system shall include evaluation of relevant information relating to these reports and the promulgation of related information;

- i) report to the holder of the type-approval or design approval, all cases where products, parts or appliances have been released and subsequently identified to have possible deviations from the applicable design data, and investigate with the holder of the type-approval or design approval in order to identify those deviations which could lead to an unsafe condition;
- j) report to the CAA the deviations which could lead to an unsafe condition identified according to subparagraph i). Such reports shall be made in a form and manner established by the CAA;
- k) provide assistance to the holder of the type-approval or design approval in dealing with any continuing airworthiness actions that are related to the exercise of the privileges of this approval;
- l) establish an archiving system ensuring conservation of the data used to justify conformity of the products, parts or appliances. Such data shall be held at the disposal of the CAA and be retained in order to provide the information necessary to ensure the continuing airworthiness of the products, parts or appliances.

Supplement 1 to A8-22

EU Criteria for qualified entities

- 1 The entity, its Director and the staff responsible for carrying out the checks, may not become involved, either directly or as authorised representatives, in the design, manufacture, marketing or maintenance of the products, parts, appliances, constituents or systems or in their operations, service provision or use. This does not exclude the possibility of an exchange of technical information between the involved organisations and the qualified entity.
- 2 The entity and the staff responsible for the certification tasks must carry out their duties with the greatest possible professional integrity and the greatest possible technical competence and must be free of any pressure and incentive, in particular of a financial type, which could affect their judgment or the results of their investigations, in particular from persons or groups of persons affected by the results of the certification tasks.
- 3 The entity must employ staff and possess the means required to perform adequately the technical and administrative tasks linked with the certification process; it should also have access to the equipment needed for exceptional checks.
- 4 The staff responsible for investigation must have:
 - sound technical and vocational training,
 - satisfactory knowledge of the requirements of the certification tasks they carry out and adequate experience of such processes,
 - the ability required to draw up the declarations, records and reports to demonstrate that the investigations have been carried out.
- 5 The impartiality of the investigation staff must be guaranteed. Their remuneration must not depend on the number of investigations carried out or on the results of such investigations.
- 6 The entity must take out liability insurance unless its liability is assumed by one Member State in accordance with its national law.
- 7 The staff of the entity must observe professional secrecy with regard to all information acquired in carrying out their tasks under this Regulation.

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Appendix 1 to A8-22

Guidance Material (GM)

GM to 5.1

Quality System

The Quality System is an organisational structure with responsibilities, procedures, processes and resources, which implement a management function to determine and enforce quality principles.

The Quality System should be documented in such a way that the documentation can be made easily available to personnel who need to use the material for performing their normal duties, in particular:

- Procedures, instructions and data to cover the issues of 5.1 are available in a written form and the updating process is clearly described;
- Distribution of relevant procedures to offices/persons is made in a controlled manner;
- Procedures which identify persons responsible for the prescribed actions are established.

The manager responsible for ensuring that the quality system is implemented and maintained should be identified.

The CAA will verify on the basis of the exposition and by appropriate investigations that the Qualified Entity has established and can maintain their documented quality system.

GM No.1 to 5.1(d)

Quality System – Independent quality assurance function

The quality assurance function, which is part of the organisation, is required to be independent from the function being monitored. This required independence relates to the lines of reporting, authority and access within the organisation and assumes an ability to work without technical reliance on the monitored functions.

GM No.2 to 5.1(d)

Quality System – Adequacy of procedures and monitoring function

Adequacy of procedures means that the quality system, through the use of these procedures, is capable of meeting the objectives identified in 5.1.

To ensure the above, the quality assurance function should include planned continuing and systematic evaluation or audits of factors that effect conformity (and, where required, safe operation) to the applicable design. This evaluation should include all elements of the quality system in order to show compliance with Chapter A8-22.

GM to 14(e)

Privileges – to control test flights

The privilege to control test flights is intended to allow similar activity to that defined in Schedule 3 of the Air Navigation Order (2005) as amended, "A and B Conditions". In producing procedures covering the control of test flights applicants should refer to the BCAR Chapters listed below. Although strict compliance to the content of these BCAR is not necessary the principle features should be adopted within the applicants' procedures as appropriate.

BCAR Chapter A3-3, A3-5, A3-7, A3-8 and A8-9.

GM to 15(h)(i)(j)**Obligations of the holder – internal airworthiness reporting system**

Although not normally the holder of any type approval or design approval, a Qualified Entity may have responsibility for a number of aircraft types and is therefore required to have in place an internal airworthiness reporting system. The internal airworthiness reporting system should take the form of a process for gathering information, assessing the causes and potential impacts on the aircraft administered under the approval held, and if found to be necessary, promulgating technical information to the appropriate parties to address any issues that may arise.

The organisation's procedures should establish

- a) A means for receiving information, which may be presented in a range of different formats, from external sources (e.g. manufacturers, distributors, owners, inspectors) and internally from within their own organisation. Information sources could include, but are not limited to:
 - accident, incident and defect reports;
 - applications for repair approval;
 - information promulgated by manufacturers or agents, and could come in the form of written or verbal communication of which a record should be made.
- b) The receipt of such reports should be logged on a common register and periodic meetings should take place involving the technical team who assess the severity of the actual or potential risk associated with the condition, progress any investigation and define any corrective actions deemed necessary.

A formal record of these meetings should be maintained and clearly identify the decision making process throughout. Conclusions could range from no action being taken to a recommendation to the CAA for mandatory action. The organisation should also develop a means for promulgating both targeted and general safety information or recommendations directly to their membership.